

Published every Saturday by the Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa., with editorial and executive offices: 30 Church Street, New York, N. Y., and 105 West Adams Street, Chicago, Ill.

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The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.).

Subscriptions, including 52 regular weekly issues, payable in advance and postage free; United States and possessions, 1 year \$6.00, 2 years \$10.00; Canada, including duty, 1 year \$8.00, 2 years \$14.00; foreign countries, 1 year \$8.00, 2 years \$14.00.

Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 95

November 18, 1933

No. 21

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Tells of results which show 7.4 per cent fuel saving, improved steaming and other important advantages which have prompted this road to adopt the design as standard.

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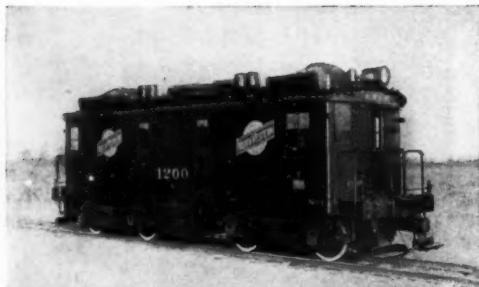
The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

How to Reduce "Switcher"

G-E 800-hp. diesel-electric locomotive in yard switching service for the Erie R.R.



The D. L. & W. recently ordered twelve 600-hp. diesel-electrics—the largest order for locomotives in two years! It is significant that diesel-electrics were chosen.



600-hp., C. & N. W. Ry.

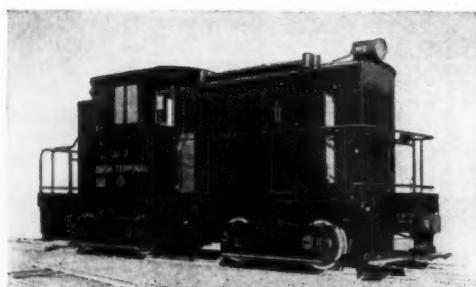
These are the owners of G-E equipped diesel-electric locomotives—a total of 123:^{*}

American Rolling Mill Co.	7	Great Northern R.R.	1
Baltimore & Ohio R.R.	1	Hoboken Terminal R.R.	2
Buffalo General Electric Co.	1	Illinois Central R.R.	6
Bush Terminal R.R.	7	Ingersoll-Rand Co.	1
Canadian National Railways	1	Jay Street Connecting Ry.	1
Central R.R. of New Jersey	1	Lehigh Valley R.R.	6
Chicago, Burlington & Quincy R.R.	3	Long Island R.R.	2
Chicago & North Western Ry.	4	Manufacturers' Railroad	1
Chicago, Rock Island & Pacific R.R.	1	Michigan Central R.R.	4
Delaware, Lackawanna & Western	16	New York Central R.R.	40
Donner Steel Co.	4	New York, New Haven & Hartford	1
Erie Railroad	5	Reading Company	2
Foley Brothers	1	Red River Lumber Co.	1
Ford Motor Co.	2	Union Carbide Co.	1

*13 of these are now on order

Horsepower	300	460	600	750	800	880	1000
Number	† 84	3	32	1	1	1	1

† 45 of these 300-hp. locomotives are of the combination 3-power type



300-hp., Bush Terminal R.R.



300-hp., 3-power, D. L. & W. R.R.



600-hp., Ford Motor Co.

355-6

GENERAL  **ELECTRIC**

The "New Deal" and the Transportation Industry

Every intelligent, honest and public spirited person will concede the need for a new deal, or several new deals, in business. The proof of the need is the present depression and the almost innumerable revelations of unwise or crooked practices in business that helped to cause it. There is not, however, unanimity among those who concede the need for a new deal as to its proper objective or as to the methods that should be adopted for attaining it.

The new deal advocated by most of those who are assumed authoritatively to interpret the policies of the administration has as its objective a general redistribution of the national wealth and income and the employment of government planning and supervision to attain it. We do not know whether these persons correctly interpret the policies of the administration, but in our opinion this is not the kind of a new deal that is needed or that will promote the national welfare. The kind of a new deal that we believe is needed is one intended to increase the national wealth and income, and which, for the purpose of attaining this objective, will use methods that will tend to make it more certain that each industry, company and individual will get a share of the national wealth and income proportionate to the contribution of that industry, company or individual toward the creation of national wealth and income. Admittedly, the accomplishment of such a new deal would be difficult, but it would be no more difficult than the accomplishment of the new deal advocated by economists of the sentimental, socialistic school, and, in the long run, it would be far more beneficial to every class of the people.

Why Government Should Interfere in Business

The most effective available argument for a new deal in business consists of the recent disclosures of the misuse, by so-called "leaders" in business, of their positions of trust and power to enrich themselves especially at the expense of those who entrusted them with power with the expectation that they would use it to safeguard and promote the interests of their stockholders and depositors, not to rob them. But an argument for the redistribution of wealth and in-

come which is based upon such abuses of trust and power is entirely fallacious, because it does not distinguish between wealth and large incomes secured by persons who use methods that increase the national wealth and income, and wealth and income secured by the entirely different class of persons who merely prey upon the actual producers of wealth and income.

For the government to interfere in business to destroy predatory practices and punish those who use them always has been accepted as sound policy by every unprejudiced and intelligent student of economics and business, because such government interference tends to reduce or prevent the robbery of the actual producers, and thereby to increase national wealth and income. On the other hand, for the government to interfere in business for the purpose of restricting increase of the wealth and income of all "successful" men, regardless of the means used by them, is to hamper ability that is used to create wealth and income as much as ability that is used merely to prey upon the real producers, and thereby to hinder the increase of national wealth and income. Whatever hinders increase of the total national wealth and income is inimical to every class of the people, farmers as well as business men, wage earners as well as the middle class and the rich.

Unfair Competition in Transportation

To no other industry is it more essential than to the railroads that there shall be a new deal, provided it is to be based upon sound principles, is to have as its objective an increase in the total national wealth and income, and is to employ policies and methods designed to reward every industry, company or individual in proportion to the contribution made to increasing the national wealth and income. The reason why this is so is that the railroad industry, each railroad company and the employees of the railroads, are being subjected to more unfair and parasitic competition than any other industry and its employees in this country. One of the principal means being used by the administration to establish a new deal is an effort to eliminate unfair competition. There is not a single form of unfair competition ostensibly or actually sought

to be reduced or destroyed by NRA to which the railways and their employees are not subject. Furthermore, the existence and effectiveness of most of the forms of unfair competition to which the railways and their employees are subject are largely or mainly due to policies of the very government which is seeking through NRA to eliminate unfair competition and other unfair business practices.

Will the government be consistent and constructive enough to change those of its own policies which help to maintain and intensify in the transportation field the very kinds of unfair competition which it condemns and seeks to eradicate in other industries? Will the business men who, whatever may be their attitude toward other recovery policies of the government, gladly accept the opportunity to reduce or eliminate within their own industries forms of competition to which they object, be consistent and fair enough to support legislation for the purpose of reducing or eliminating unfair competition in the transportation field? The answer to these questions will be forthcoming when Congress, at its approaching session, begins the consideration of transportation legislation.

Selling Transportation Below Cost

One competitive practice which is now condemned both by the government and by most business men is that of selling below cost. Every class of competitors of the railways is doing this, and the federal and state governments, by their policies of subsidization, are furnishing the competitors of the railways, at the expense of the taxpayers, the money which enables them to do it.

The cost of transportation on inland waterways includes the cost of providing and maintaining the waterways. Every operator of a boat on an inland waterway is selling transportation below cost, because he does not have to include in his costs or rates any part of the costs incurred in providing and maintaining the waterway.

The government itself is operating a barge line on the Mississippi river system which is selling its transportation far below cost because it not only does not have to include in its costs and rates any part of the cost of providing and maintaining the waterways it uses, but does not have to include even interest upon the investment in its boats and terminals or all of its operating expenses.

Every operator of a truck upon the highways is selling transportation below cost, because he does not have to include in his costs and rates rentals for the use of the highways sufficient to reimburse the taxpayers for the cost incurred by them in providing him with a highway.

The "New Deal" and Wages in Transportation

The government's ostensible policy is to prevent companies in all the various industries from paying low wages and working their employees long hours to enable them to take business from their competitors by

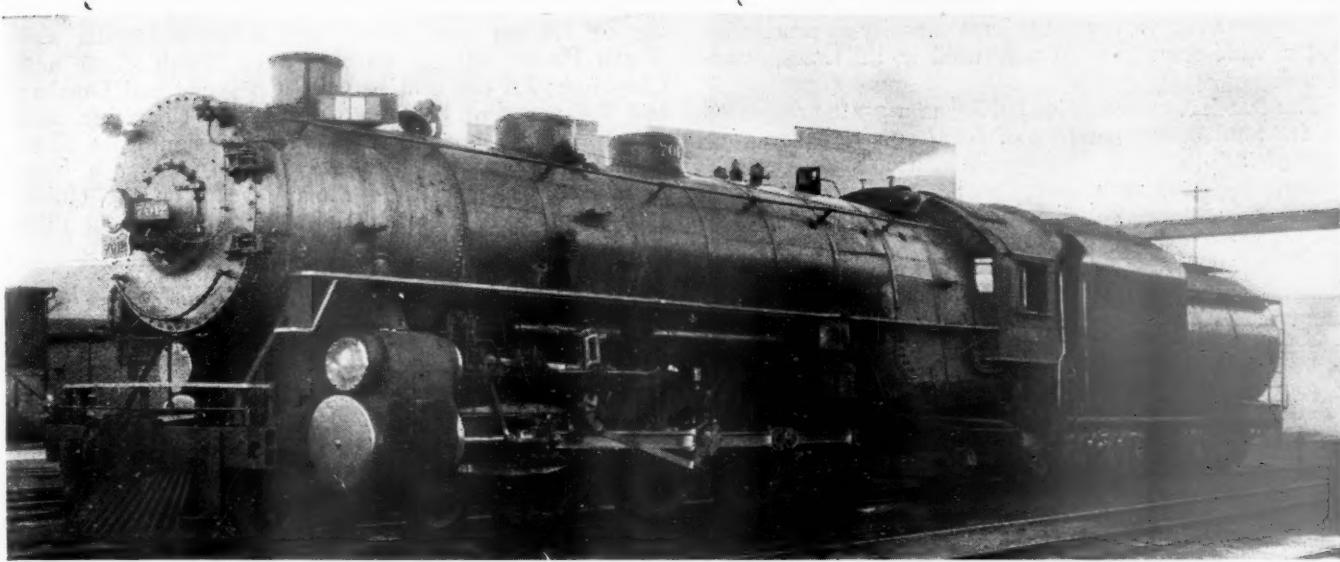
making cutthroat prices. The government effectively interfered last summer to prevent the railways from making the wages of their employees more than 10 per cent less than they were before the depression. The working hours established by the truck operators in the code accepted by the NRA are, however, longer and the wages fixed are much lower than those of railway employees. Therefore NRA has approved of the very cutthroat competition between the railways and truck operators in respect to labor conditions and wages that it is its ostensible purpose to eliminate from other industries.

The railways are subject to almost every conceivable form of regulation of their rates for the purpose of preventing unfair competition between them and unfair discriminations between communities and shippers. Their competitors by land, water and air are subject to no comparable regulation of their rates, with the result that every unfair and demoralizing form of unfair discrimination, including secret rebating, which the railroads are forbidden to practice, is practiced universally by their competitors.

A "New Deal," By All Means

The effects of all these policies, conditions and practices in the transportation industry are worse than they could be in any other industry. In almost any other industry a company which is subject to unfair competition can close its plant and quit business. A railroad cannot shut down its plant, and can hardly discontinue any part of its service, without government permission. The railroads render a more essential service than any other industry and consequently unfair competition which undermines their ability to render good and adequate service is peculiarly harmful to the public. In order that good and adequate railway service can be provided it is necessary that the railways shall be given opportunity to make all the gross and net earnings to which the enterprise, efficiency and economy of their operation entitles them; and nothing could more completely violate every principle of the kind of a new deal that is needed in business than a continuance by the government and the competitors of the railways of policies and practices which constantly deprive the railways of this opportunity. Finally, unfair competition in other industries is demoralizing only in them, while unfair competition in the transportation industry, is, because it serves all industries, demoralizing in all industries.

By all means let us have a new deal. Let us have, especially, a new deal in transportation based upon the principles (1) that every industry and every part of any industry shall give its employees reasonable wages and working conditions, (2) shall not be enabled to sell below cost with the aid of the taxpayers' money in competition with other industries that have to pay all their costs from their own earnings, and (3) shall not be allowed to use competitive practices in the making of prices or rates which its competitors are forbidden to use.



U. P. Locomotive No. 7012 Equipped with Firebars Ready for Test

Union Pacific Makes Service Tests of Firebar Grates

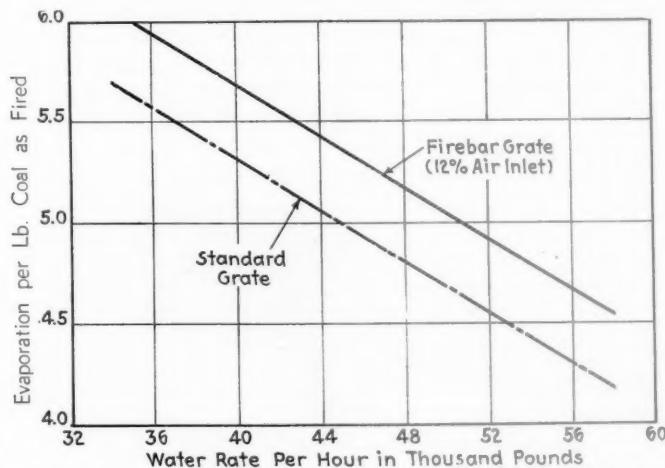
Adopts this design as standard when test results show
**7.4 per cent fuel saving, improved steaming
and other important advantages**

In October, 1932, the Union Pacific made initial applications of Firebar grates, furnished by the Firebar Corporation, to a three-cylinder, 4-12-2 type steam locomotive, used in fast freight service, and to a conventional 4-8-2 type locomotive used in heavy fast passenger service. The results of these early installations were sufficiently promising so that a second 4-8-2 type locomotive, No. 7012, was equipped in March, 1933, and extensive comparative service tests made between this locomotive, as provided with Firebar grates having 12-per cent air openings, and as equipped with the former Union Pacific standard table grates, having $\frac{3}{8}$ -in. by $4\frac{1}{4}$ -in. slotted openings. An average fuel saving of 7.4 per cent in favor of the Firebar grates was shown; also improved steaming, elimination of ash-pan dumping en route, avoidance of the necessity for dump grates, reduction of ash-pit time at terminals and reduced maintenance expense. As a result of these important demonstrated advantages, the Union Pacific has adopted Firebar grates as standard, and arrangements have been made to date to equip 234 locomotives, including all of the 5,000, 7,000, and 9,000 classes and some from several other classes, including switching locomotives.

Comparative Fuel-Performance Tests

The comparative fuel-performance tests, covering over 10,800 miles of actual service, were made with Locomotive 7012 on Trains 17 and 27, westbound, and Trains 8 and 28, eastbound, between Omaha, Neb., and Cheyenne, Wyo., a distance of about 500 miles. In order to determine the performance under varying grade

conditions and schedules, the test was divided at North Platte, Neb., for the westbound or heavy movement. Eastbound, the test runs were unbroken from Cheyenne to Omaha, the capacity of the locomotive not being fully developed, due to the general down-grade movement in this direction. The only variable in the locomotive was the type of grate used, all other conditions being held constant as nearly as possible. The front-end details and the nozzle size were adjusted in accordance with the recommendations of the fuel department before the test was started and no changes were made in these adjustments during the entire test. In general, the boiler



Evaporation in Pounds of Water per Pound of Coal as Plotted Against the Water Rate per Hour—Locomotive 7012, Omaha to Cheyenne

was operated at as nearly uniform capacity as practicable and a wide-open throttle was used at all times, west-bound.

The test locomotive, No. 7012, has a grate area of 84 sq. ft., total heating surface of 6,837 sq. ft., boiler pressure of 200 lb., and is equipped with a Type-A superheater, firebrick arch and Duplex mechanical stoker. It has a 24-in. smoke stack with 40-in. flared stack ex-

ing of 7.4 per cent when used between Omaha and North Platte; 8.0 per cent, between North Platte and Cheyenne; 7.6 per cent between Cheyenne and Omaha; and 7.4 per cent between Omaha and Cheyenne, and return. This showing is particularly significant since table grates, with which the comparison was made, have been used satisfactorily for many years on the Union Pacific and are, themselves, much more efficient than

Summary of Comparative Fuel-Performance Test Results with Union Pacific Locomotive 7012 Equipped First with U. P. Table Grates and Subsequently with 12-Per-Cent Firebar Grates

	(1) Omaha to North Platte	(2) North Platte to Cheyenne	(3) Cheyenne to Omaha	(4) Omaha to Cheyenne and Return
Former standard grates	12-per-cent Firebar grates	Former standard grates	12-per-cent Firebar grates	Former standard grates
Total water to boiler, lb.	1,057,837	1,109,468	639,659	2,390,511
Total coal fired, lb.	239,302	233,756	126,554	505,825
Water rate per hour, lb.	53,472	53,255	46,803	46,266
Rate of evaporation	4.42	4.75	5.05	4.73
B.t.u. content of coal	12,582	12,552	12,685	12,504
Per cent saving in fuel, Firebar over standard grates		7.4	8.0	7.6

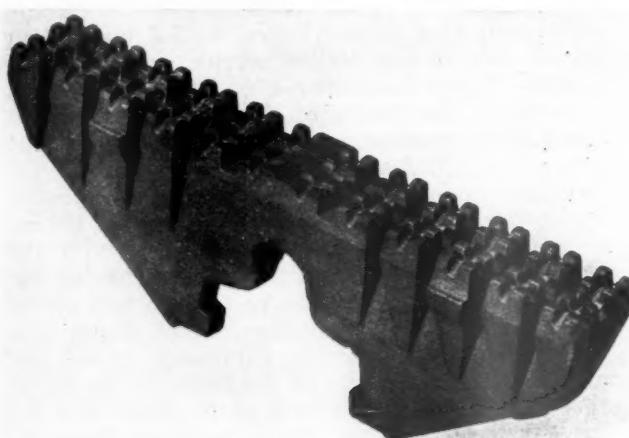
tension and a 14-in. Sweeney star-shaped exhaust nozzle, of 51.6 sq. in. effective area. The locomotive tender has a capacity for 15,000 gal. of water and 21 tons of coal. The volumetric method of making both coal and water measurements was followed throughout. Starting from the initial terminal with a level tank of coal, and water at a known height in the calibrated Vanderbilt tank, measurements were taken at five intermediate coal and water stations en route, the errors of reading being compensating in character and not cumulative, so that surprisingly consistent and accurate determinations of coal and water consumption were obtained, taking the test as a whole.

The greatest opportunity for error in the calculations lay in the assumption of a uniform quality and specific gravity for the fuel, and this error was minimized by using coal taken from only three mines, all in the same field, namely, that at Rock Springs, Wyo. This coal has an average heat content of about 12,500 B. t. u. and a specific weight of 52 lb. per cu. ft. By previous determination, this specific weight was found to be accurate within a maximum variation of 2 per cent.

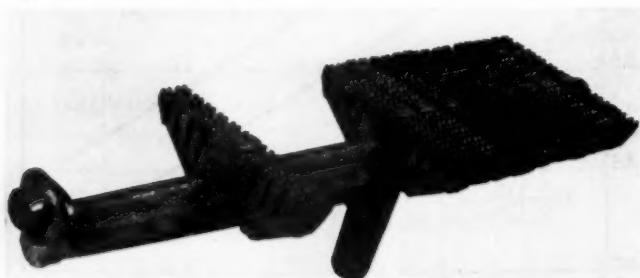
In recording data for the computation of test results, readings of initial boiler pressure, steam chest pressure and back pressure were obtained from the usual gages. The temperature of superheated steam was measured by means of a gage in the cab with pyrometer extension to the right steam pipe, a second pyrometer being installed in the exhaust passage to show the temperature of exhaust steam. The vacuum in inches of water was measured by means of a glass U-tube in the cab and pipe extension to the smoke box just in front of the netting. Results of the tests are summarized in the table which shows that the Firebar grates effected a fuel sav-

earlier finger-type grates. While the Union Pacific table grates, with slots of the size mentioned, have about 32 per cent theoretical air opening, the effective air opening is much less, due to partial sealing up of the available openings by slag and coal.

Again referring to the table, Column 2, it will be noted that the best performance for the Firebar grates was made on that part of the test run from North Platte to Cheyenne, when the locomotive was working at normal capacity. A consideration of the round-trip figures in Column 4 shows that 26,774 more lb. of water were evaporated with 29,567 fewer lb. of coal in the Firebar-equipped locomotive boiler than when using the former standard table grates. The corresponding increase in the evaporation rate was from 4.73 to 5.08 lb. of water per lb. of coal, or 7.4 per cent increase in the efficiency of combustion. The table shows the unusually uniform



The Firebar Unit



A Partial Assembly of a Firebar Units on the Carrier Bar

B. t. u. content of the fuel, as well as the uniform rate of boiler working (water rate per hr.) which is essential in any attempt to draw accurate deductions from a comparative test of this kind.

The rate of water evaporation in a boiler varies as the demand increases or decreases and, to indicate this variation in the case of the Union Pacific tests under consideration, the rate of evaporation in relation to hourly boiler demand is shown graphically in one of the illustrations for both types of grates tested. The general difference in performance in favor of the Firebar-grate-

equipped boiler is slightly under 0.4 lb. of water per lb. of coal at all rates of boiler operation.

As was to be expected, the superheat developed in these tests varied as the coal consumption per sq. ft. of grate per hr. and was highest for the higher firing rates. The Firebar grates showed about 15 deg. more average superheat than the standard grates. This indicates conclusively that an undesired excess of air was obtained with the former standard table grates which increased the amount of coal necessary to produce the same amount of steam.

A noticeable improvement was observed in the steaming qualities of Locomotive 7012, while equipped with the Firebar grates, when leaving the initial terminal with a green fire and also on the long drifting movement between Cheyenne and Julesburg, eastbound. The crews soon found that it was unnecessary to crowd the fire to maintain steam pressure following a stop or upon leaving the terminal; as a result, the reduction in draft and density of smoke emission from the smoke stack was marked. The fact that the demand upon the boiler for



Firebar Grates with 12-Per-Cent Air Openings, as Applied in the Firebox of Locomotive 7012—View Also Shows New Arch Brick in Place



The Firebox of Locomotive 7012, as Equipped with Brick Arch and the Former U. P. Standard Table Grates Having $\frac{3}{8}$ -In. by $4\frac{1}{4}$ -In. Slotted Air Openings

steam was met with a reduced draft can be attributed to the fact that the largest gap between air inlets of the Firebar grates does not exceed $\frac{3}{8}$ in. throughout the entire grate shaking area. Coupled with minute air admission, which is on a plane $\frac{9}{16}$ in. below the fuel supporting surface, by means of transverse and longitudinal air passages, the air admitted is further distributed to over 80 per cent of the total fuel-burning area.

Reduced Time Required on Ash-Pits

With the slotted-type table grates in passenger service between Cheyenne and Omaha, considerable train delay was occasioned by the dumping of ash-pans at various points en route. Notwithstanding the fact that the Union Pacific table grates were fitted up snugly, having a maximum opening of $\frac{3}{8}$ in. width on the grate, the peculiar characteristics of Rock Springs coal necessitated dumping the ash-pans at Ogalalla, Neb., and Kearney, eastbound, and at Columbus, Neb., Kearney and Ogalalla, westbound, without any grate shaking being done. The lightness of the fuel bed, combined with the vibrations of the locomotive, were responsible for this high precipitation of live and green coal to the ash-pan. With Firebars, the run between Cheyenne and Omaha, and westbound between Omaha and Cheyenne, was made without having to dump the ash-pan anywhere en route. The round trip of over 1,000 miles between Omaha and Cheyenne and return was made

without dumping the ash-pan, and the total residue in the ash-pan accumulated during the entire round trip, upon arrival at Omaha, did not fill the hopper part of the pan.

The period of time on the ash-pit was checked on three locomotives of the 9000 Class, equipped with the standard slotted grates, the average time on the pit to knock the fire and clean out the ash-pan being 30 min. On Firebar-equipped locomotives of this class, the average ash-pit time for three locomotives was nine minutes.

Due to the excessive loss of live fire to the ash-pans and the liability of fires along the right of way caused by fire being blown from the ash-pans, the Union Pacific standard practice has been to apply side wire netting to the ash-pan flares. In the winter months, this netting becomes plugged up by ice and snow and has a detrimental effect on good firebox combustion. On Firebar-equipped locomotives, it has been found possible to remove this ash-pan side netting without fear of setting fires.

Comparative Firing-Up Test

A comparative firing-up test was made with the 9000-Class locomotives to determine the relative coal consumption and time required to develop 150 lb. of steam pressure, with the following results: Fifty-five minutes of time and 2,484 lb. of coal were required when the locomotives were equipped with the former standard table grates and only 37 minutes and 2,295 lb. of coal when the grates were of the Firebar type. The house blower line pressure and the temperature of the feedwater were equal and the tests showed, therefore, that the Firebar-equipped locomotives attained the required boiler pressure in 33 per cent less time and with 7.6 per cent less coal burned.

Since the fuel tests were completed, some nozzle and front-end tests have been conducted, using Firebar grates, specified steam pressures being maintained with an increase in nozzle size of 10 per cent.

An examination of the records indicates that grate and ash-pan maintenance were substantially reduced by the use of the new grates. The first three Firebar installations on Locomotives 9030, 7012 and 7026 have been in service an average of 10 months each, without requiring any material or labor cost for maintenance. The absence of live fire in the ash pans has a marked tendency to reduce the cost of replacing and patching burned and warped ash-pan sheets.

What About the Turntable?

Essential elements of the design and details
of this important feature of a
modern engine terminal

[The following information comprises an abstract from a report presented before the 1933 convention of the American Railway Engineering Association, as well as of the discussion which followed its presentation. The report is the work of a subcommittee of the Committee on Shops and Locomotive Terminals, and was presented by the subcommittee chairman, J. M. Metcalf, assistant engineer, Missouri-Kansas-Texas, St. Louis, Mo.—Editor]

TURNTABLES are in general use at locomotive terminals for turning power and for providing convenient movement between service tracks and engine houses. The whole design of the circular engine house is based upon the turntable at its center, which makes it possible for locomotives to enter and leave any stall with minimum movement, headed in either direction. At small outlying terminals caring for few locomotives, there are advantages in simplicity of operation and maintenance in favor of the wye for turning locomotives. For electric locomotives, designed for operation in either direction, and hence not required to be turned at terminals, a rectangular engine house without a turntable serves satisfactorily, especially where the number of locomotives handled is not so great as to involve too much complexity in the track layout, but for the steam locomotive terminal, where any considerable number of locomotives are cared for, the circular house with stalls radiating from a central turntable has been found necessary.

Essential Features

The modern turntable is commonly a girder supported at both ends and the center, and pivoted at the center so as to be turned readily. Where drainage conditions permit the deeper pit required, the deck type of girder is generally preferred and is less likely to be damaged in case of derailment, but through tables are in satisfactory use at many places where a shallow pit is desirable. A center bearing designed to facilitate the turning movement, and end support on trucks moving on a circular rail are essential features. The roller-type center bearing with heavy conical rollers has been replaced in many



A Primitive Type of Turntable Used in the Early Days on the Chicago, Rock Island & Pacific

recent installations by a bronze flat-disc center which is found to stand up better under heavy service, and requires less care and less expense for maintenance. The circle rail for supporting the end trucks is commonly a rail of heavy section, curved to the proper radius, and may be set on ties supported on a concrete base, or on special plates or castings set in concrete.

A standard timber bridge deck floored with plank is most commonly used to support the track rails. The length and thickness of ties required depend on the spacing of the turntable girders. Special steel beams are often used at the table ends, instead of wood ties, to provide the additional strength required to withstand the impact resulting from the movement of locomotives entering the table.

Cleanliness and proper drainage of the pit are essential to satisfactory maintenance, and a concrete floor over the entire pit, with adequate sewer connections, is desirable, although macadam or other paving may give fairly successful results. In modern installations, a concrete rim wall supporting the radial tracks commonly extends around the full circle of the table. A timber wall, sometimes extending only under the portions of the circle where required for the approach tracks, may be used for outlaying installations serving only a few radial tracks, but is less satisfactory for the long deep tables required for modern heavy power. Good practice calls for an opening in the rim wall at one point in the circle, large enough to accommodate one or more workmen inspecting or adjusting the end trucks and tractors.

Coping timbers or steel beams may support the radial track rails on the rim wall. These should be anchored to the concrete wall, and the rails held in place both longitudinally and laterally by suitable fastenings. If required, additional anchorage should be provided to prevent the possibility of radial rails creeping toward or away from the pit. It is desirable that the angles between radial tracks be great enough to make frogs unnecessary. A spacing such that the rails of adjacent tracks may be blocked and bolted together helps in holding the rails in proper position.

The use of rail locks to assure that the table rails line up with those of the radial track before a locomotive moves onto or off the table was formerly thought essential, but such locks are now commonly omitted or not used.

Balanced Type Being Superseded

Until recent years turntables were all designed to be turned with the locomotives balanced over the center, with both ends free. Greater length and weight of locomotives made this increasingly difficult and the balanced type of table has given way, in most modern installations, to one in which the table is supported at both ends as well as the center. These may be of the articulated or twin-span type, or of the continuous-girder type. In either, the girder becomes two spans, each supported at both ends, instead of a single span balanced and sup-

ported only in the center. By the use of the three-point type a reduction is effected in the weight of girders necessary to support the locomotive and, correspondingly, in the depth of pit. There may also be some saving in the length of table required, which in the balanced type must provide a perfect balance with both loaded and empty tenders, as well as in the size and design of center. The three-point table, however, requires much greater tractive force, and consequently a heavier and more expensive power unit, and greater power consumption. It also requires a heavier design of circle rail and circle-rail support.

Considerable vertical play is necessary at the ends of a balanced table to provide for the deflection of the table under load. This involves tipping the end down when a locomotive enters and leaves, with an impact on the ends and some straining of the center. The end-supported, three-point type should be maintained with the table rails at all times practically at the same level as the radial tracks, and under these conditions much of the expense of maintaining the track, the table, the trucks and the center is reduced. At the same time, elimination of the necessity for balancing the locomotive on the table speeds up operation and materially increases the capacity of a busy table. In some cases, it may be possible to effect a substantial increase in the life of an old table, designed for balanced operation and over-stressed under modern power, by converting it to the three-point bearing type. This involves the application of heavy end trucks and additional tractive power.

Except for outlying terminals, where only a few light locomotives are turned, mechanical traction is provided. For the older balanced-type tables, tractors operated by electricity, or in some cases by air, and running on the circle rail, may be applied to one or both ends of the table. Electric motors, geared direct to the trucks at both ends of the table, usually supply the power for the modern three-point tables.

As with all machinery, the satisfactory operation of a turntable is dependent upon constant care and frequent, thorough inspection. Lubrication of all moving parts at proper intervals is essential. The table should be raised and the center carefully inspected at least once each year. All parts of the table, the machinery and the pit should be kept clean, and the steel should be kept painted. The pit sewer must be kept open and operating properly to insure a dry pit at all times. The maintenance of line and surface of radial tracks must be watched.

Conclusions*

1. The use of a three-point turntable is preferable where long locomotives are to be handled. If the balanced-type table is used, it should be long enough to balance the locomotive when the tender is empty.

2. A deck turntable is usually more economical, but in the balanced type, a through table may be desirable where the use of a deck structure would greatly increase the cost or make satisfactory drainage difficult.

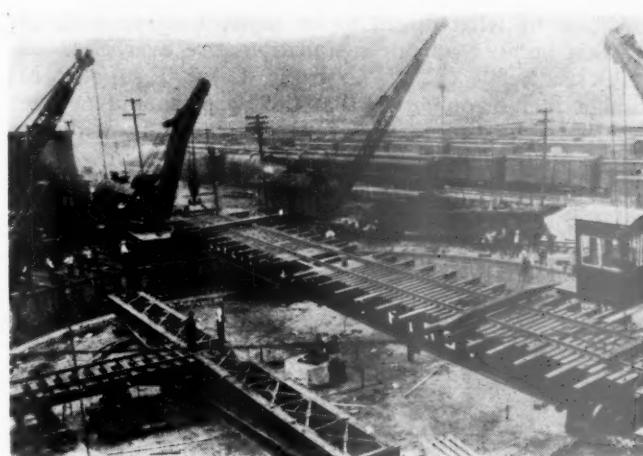
3. Where modern heavy locomotives are to be turned, mechanical power for operating turntables should be provided. Where current is available, electricity is the most reliable means of operating a turntable. The power wires should be led to the table underground and so arranged as to minimize the danger of interruption of supply in case of fire in the engine house or other emergency. Where electric power is not available, a compressed air motor may be used.

4. The deck of the turntable should be wide enough to provide a walk on each side, and should be protected with handrails.

5. The turntable pit should be paved and adequately drained.

6. The circle wall should preferably be of masonry, with proper supports and fastenings for the rails on the coping. A timber or steel coping is preferable to a rigid masonry coping.

* These conclusions were adopted for inclusion in the manual of the association by action of the convention, with the exception of No. 3, which was deleted.



Replacing a Balanced Type Turntable with One of the Three-Point-Support Type

7. The circle rail should preferably be supported on a concrete base with the load properly distributed by ties, plates or castings.

8. Easy access to the parts of a turntable for the oiling of bearings, painting and inspection should be provided in the design of the pit, unless ample provision is made in the turntable itself.

9. Thorough lubrication, systematic cleaning of both table and pit, and careful inspection at regular intervals are essential to the satisfactory operation of a turntable. The table should be raised and the center thoroughly inspected at least once a year.

10. Radial tracks should be kept in good line and surface. The radial track and turntable rails should be maintained with proper spacing between their ends and at proper relative elevation.

Discussion

[Following are excerpts from the discussion that disclose the primary points of difference that were brought forth.]

B. R. Leffler (N. Y. C., commenting on Conclusion 1): I would say that that might have a bearing on the conversion of the old tables into three-point tables. It is not necessary to have the three-point type if you put in new end trucks of sufficient capacity and heavy enough tractors. By this device you can quite often save considerable money and make the old table serve for years to come.

Mr. Metcalf: That is true and is recognized in the discussion. I think it is a matter of design. We have brought out in the discussion the fact that such conversion is practicable.

Mr. Leffler: I wish to comment on Conclusion 3 "The power wires should be led to the table underground." We used to do it that way and gave it up; we now bring the wires up over the top to a properly constructed frame over the center of the turntable. This plan has many advantages. You can see the wires and they are not subject to flood conditions.

Mr. Metcalf: It was the view of a number of members of the committee that overhead wires were in more danger from fire and more liable to interruption from various causes, and that the underground construction was preferable.

Mr. Leffler: The electrical department of our railroad is opposed to bringing the wires up through the center. The wires of the overhead construction can be inspected, which is of great advantage from a maintenance standpoint. Another advantage is that all of the contacts can be seen and are not buried underground, beneath the table, where water and dirt and other obstructions can put the table out of service.

G. S. Fanning (Erie): If our practice is any in-

dication of what ought to be done, I agree with Mr. Leffler, because all our installations are overhead.

O. E. Selby (C. C. C. & St. L.): I support Mr. Leffler in his contention that the wires should be overhead. In the interest of safety and simplicity of maintenance, that should be done.

L. P. Kimball (B. & O., committee chairman): Apparently the New York Central Lines have been so fortunate as not to have had experience with fire similar to that occurring in one of the engine houses on the Baltimore & Ohio. In that case we lost a frame engine house with 35 engines stored in it at the time. Early in the fire the turntable went out of service owing to the fact that the wires to the operating equipment were overhead. If those wires had been underground, we probably would have been able to get a large number of those locomotives out and away from the fire. It was the thought of the committee, while recognizing the accessibility of overhead wiring connections with turntables, that the safety, from a fire protection standpoint, of the underground wires justified the recommendation as contained in the conclusion.

Mr. Selby: I think the example of a frame engine house should not be given much weight. I am sure nobody here wants to advocate the use of frame engine houses. I have no doubt that the wires, in the case mentioned, ran directly from the engine house to the turntable. If there had been a proper installation of the wires, with an independent route from the source of power to the overhead frame, there would have been little likelihood of trouble.

Another feature that is important is the drainage, or the flooding of the turntable pit. There is a great deal more likelihood of the turntable pit being flooded than there is of the engine house taking fire. Turntable pits of good design, with proper drainage, may from time to time be flooded by the stopping up of drains or by excessive snowfall. A great many things of that kind can happen, whereas a fire happens once in a great many years.

J. A. Peabody (C. & N. W.): It is easy enough to put cables under a railroad and have them safe, but to carry those wires up on the turntable is another matter. To keep them free from trouble due to improper drainage is a difficulty that is being experienced everywhere. I know that in our case we have had wires underneath and we have taken them out and put them overhead, preferring the good day-by-day operation to the possibility of difficulty in case of fire emergency. We do not have fires very often, and we use the turntables every day.

[After further discussion of a parliamentary nature, it was voted to exclude Conclusion 3.]

Mr. Leffler: There should be no more occasion for raising a turntable and examining the center than to raise a 250-ft. vertical-lift or bascule bridge to examine the trunnions. If the turntable center is of proper design and properly lubricated, such inspection once a year is not necessary. We have a flat disc center that has been in use for 20 years and it has been well lubricated. About three years ago we took it up just to see whether it was nice and smooth. It was as beautiful as a mirror. I do not think it will be necessary to take that center up for another 20 years. This idea of taking up the center of a turntable is a confession of poor design originally. The difficulty is found mostly with roller-bearing centers, thrust washers and thrust balls grinding to pieces, centers becoming flooded with water, and dirt diluting the oil. The committee has said nothing in these recommendations about proper turntable centering or locking devices at the ends. There are a number

of simple devices which can be and are being used and such devices will prevent the derailment of locomotives going on and off the table.

President John V. Neubert (N. Y. C.): That is particularly true with the balanced table or modifications of that type. On a three-point table you will find that the engine house crew will not use locking devices but with them you can avoid a lot of derailments.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended November 4 amounted to 607,785 cars, a decrease of 28,889 cars as compared with the week before, but still 20,483 cars above the total for the corresponding week of last year. As compared with 1931 it was a decrease of 109,263 cars. L. c. l. merchandise and grain and grain products showed increases as compared with the week before, and miscellaneous freight, grain and grain products, forest products, ore, coke and live stock showed increases as compared with last year. All districts except the Pocahontas and Southwestern showed increases as compared with last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, November 4, 1933			
Districts	1933	1932	1931
Eastern	133,530	129,247	154,792
Allegheny	114,203	106,422	138,922
Pocahontas	42,883	43,370	45,458
Southern	88,713	87,299	104,273
Northwestern	74,928	68,679	85,122
Central Western	98,972	96,955	120,674
Southwestern	54,556	55,330	67,807
Total Western Districts.....	228,456	220,964	273,603
Total All Roads.....	607,785	587,302	717,048
Commodities			
Grain and Grain Products.....	31,036	29,872	40,360
Live Stock	20,004	19,703	26,911
Coal	117,885	124,728	133,879
Coke	6,033	4,997	6,043
Forest Products	22,976	17,402	23,353
Ore	13,175	4,290	9,387
Merchandise L.C.L.	171,503	176,803	212,665
Miscellaneous	225,173	209,507	264,450
November 4	607,785	587,302	717,048
October 28	636,674	617,284	740,363
October 21	650,482	641,985	769,673
October 14	664,058	649,690	761,596
October 7	654,428	625,089	763,818
Cumulative total, 44 weeks.....	24,637,149	24,094,042	32,474,205

Car Loading in Canada

Car loadings in Canada for the week ended November 4 totaled 50,688 which was an increase over the previous week's loadings of 1,186 cars and the index number rose from 61.83 to 64.08. Loadings were heavier also by 5,158 than in the corresponding week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
November 4, 1933.....	50,688	19,529
October 28, 1933.....	49,502	19,282
October 21, 1933.....	51,705	18,873
November 5, 1932.....	45,530	18,276
Cumulative Totals for Canada:		
November 4, 1933.....	1,707,003	811,655
November 5, 1932.....	1,868,526	835,934
October 31, 1931.....	2,182,721	1,114,127

N. I. T. League Votes for Repeal of Fourth Section

Resolution opposing government in barge business also adopted at annual meeting at Chicago

MEMBERS of the National Industrial Traffic League at the annual meeting at Chicago on November 8-9 went on record as favoring the elimination of the Fourth Section of the Transportation Act of 1920, known as the long and short-haul clause. The action taken by the league carries significance in that heretofore it has upheld Fourth Section application, and it was not until its meeting in November, 1929, that it went on record in favor of a liberalization of this section. Another important action taken was the recommendation that the government retire from the operation of barge lines on the Mississippi river. Besides the action taken on various transportation subjects, the program of the meeting embraced addresses by Joseph B. Eastman, federal co-ordinator of transportation; Kenneth F. Burgess, general counsel of the Illinois Bell Telephone Company and formerly general solicitor of the Chicago, Burlington & Quincy, and Olin C. Castle, director of the Bureau of Car Pooling under the federal co-ordinator of transportation.

Officers elected for the ensuing year were: President, Fred M. Renshaw, traffic commissioner of the Buffalo Chamber of Commerce, Buffalo, N. Y.; vice-president, W. R. Scott, transportation commissioner of the Board of Trade, Kansas City, Mo.; and treasurer, Roy W. Campbell, manager of the traffic department of the Butler Paper Corporation, Chicago, (re-elected).

Addresses

Mr. Eastman, who was the guest of honor at a luncheon given on November 8, asserted that the big question now before the public is how can the processes of regulation be improved. His remarks did not imply any question as to the efficiency of the present members of the commission, but pointed to the need for arriving at conclusions and decisions without the voluminous work required in the past.

In referring to the work of the federal co-ordinator, he said many plans were under way but nothing definite had been devised. He said he was not attempting to run the railroads but hoped to help the railroads by calling their attention to the problems facing them. One of the provisions of the Emergency Transportation Act, he said, was to find ways to eliminate waste and as a result, he was considering the improvement of transportation methods. He made no prediction as to the outcome of his work, only hoping that it will result in substantial good to the roads.

Mr. Burgess confined his remarks to two theories advanced for explaining the present condition of transportation, one which infers the condition is due to the breakdown of private carrier operation and the other which contends that it is due to a breakdown of regulation. He contended that neither had broken down despite the difficulties faced by each as a result of the depression. He maintained that although earnings have fallen off, traffic has declined, dividends have been in-

terrupted and in some cases interest defaulted, these developments have not resulted in any interruption of service to any community or class of traffic and there has been no exploitation of the public. He expressed the opinion that regulation had not broken down, but that it should be altered to be made less burdensome.

Mr. Castle spoke at a business session on car pooling, expressing an opinion on the various factors that enter into the operation of a system of pooled equipment. He referred to empty car mileage and its relation to the cost of transportation, elimination of delays, car distribution and demurrage charges. An abstract of his paper will appear in a later issue of the *Railway Age*.

Waterway Transportation

The discussion of waterway transportation centered principally around the legislation proposed by the Association of Railway Executives, particularly the proposals outlined by R. V. Fletcher, general counsel, in a "memorandum containing suggestions as to needed federal legislation," issued on August 4, 1933. After consideration of the proposals, the membership adopted the recommendations of its Inland Waterways committee as follows:

The government should retire from the operation of the barge lines on the Mississippi river as early as possible, such a time being contingent upon the government's ability to convince private capital that such operation may be conducted profitably. The league is opposed on principle to the government being in the transportation business. However, it is of the opinion that transportation on the Mississippi river is desirable if feasible; the feasibility of it should be left to the discretion of the government. The government should demonstrate its feasibility and dispose of it to private interests, and if such a demonstration cannot be made, the government should admit its error and retire at the earliest possible moment.

The league reaffirms its former position in opposition to further governmental jurisdiction over water-borne traffic than now exists.

The league is unalterably opposed to burdening water traffic with restrictive legislation.

The league feels that the history of the railroads' activities when they operated the boat lines amply justifies the existing provisions of the Panama Canal Act, which provides that a railroad may not own a boat line which competes with itself and opposes any change in the existing law with reference to rail-controlled boat lines.

The league opposes the assessment of tolls against water-borne traffic unless and until an exhaustive investigation indicates that such tolls are necessary and desirable and will not act as an estoppel against water-borne traffic.

The league feels that Section 4 of the Act of March 23, 1906, entitled "An Act to Regulate the Construction of Bridges Over Navigable Waters," may be amended so that the railroads may not be penalized by the establishment of competing waterway transportation.

Discussion of several bills designed to place rate regulation of water-borne commerce on the inland waterways of the United States under the jurisdiction of the Interstate Commerce Commission indicated a well-defined opposition and led to definite action to the effect that every effort be made to prevent the passage of bills contemplating the control of water-borne traffic by the

commission. Opposition to the repeal of the Panama Canal Act was also voiced in the report of the legislative committee which appears in another column.

Consolidation of Railroads

The league reiterated its former position with respect to legislation dealing with the consolidation of railroads, "that it oppose consolidation plans which involve regional railroad systems under which existing competition will be substantially curtailed. The league will also oppose legislation which contemplates the financing of railroad consolidation by loans from the federal treasury either directly or indirectly. The league has consistently advocated legislation to provide machinery by which the Interstate Commerce Commission may approve voluntary consolidations of railroads where it finds that the action will substantially preserve existing carrier competition and will be in the public interest. It has opposed all direct or indirect methods of bringing about consolidations by legislative compulsion either through a declaration of policy by Congress or by legislative mandate."

Following a report of the Legislative committee on transportation legislation by means of industry codes, in which it was pointed out that industry has undertaken to protect itself against destructive competition by the formulation of trade practice rules which, in many instances, involve price fixing and regulation of various services, including transportation, and in which it was pointed out that while the ruling has been made that the act will not apply to railroads, nevertheless, an effort is still being made to impose the obligations of the act upon the railroads, the league adopted the following recommendation:

That in so far as efforts are being made to stabilize disorganized industries and protect them against destructive price cutting in their operations, the league feels that such effort is in the public interest and that it is desirable to undertake the experiment.

In so far as the codes will undertake to make arbitrary rates to be charged for transportation services of common carriers and contract carriers where such charges are not under public regulation, the league is of the opinion that the same principle should apply as though the action to fix such charges was undertaken by direct legislation. From the beginning, the league has opposed statutory rate making and, to be consistent with this position, reiterates its stand against the arbitrary fixation of rates, which are otherwise unregulated, where such fixation would practically amount to statutory rate making. This does not mean that the league will oppose the efforts of transportation industries to stabilize their operations to eliminate unfair practices, discriminations and preferences and to provide for co-operative action to protect themselves against cut-throat competition.

Publication of Rates on Short Notice

The report of the Legislative committee on the publication of rates on short notice to meet competition discussed the suggestion made by the general counsel of the Association of Railway Executives that Section 6 be amended by adding a proviso that rail carriers may be permitted to make changes in rates, fares and charges upon not less than five days' notice to the commission and to competing rail carriers provided within five days after such a change in rates, there is filed with the commission the affidavit of the chief traffic officer of the carrier to the effect that the changes are necessary to meet the competition of carriers not subject to the provisions of the law. The committee did not feel that the change suggested would be wise, for carriers would have absolute authority to make the changes in rates upon not less than five days' notice to the commission and to competing rail carriers and would not have to file the affidavit that the changes were necessary to meet the competition until after the rate changes had become effective. It also felt that the rail-

roads' recommendation does not provide for notice to the public as required in other cases under Section 6. As a result of the report of the committee, the league adopted the following recommendation:

Believing that the contention of the railroads is not without some merit, your committee suggests that the provision for exercise of the power of suspension as set forth in Section 15a, Paragraph 7, should be amended so as to provide that where the commission issues authority to make rate changes on less than the 30-day notice, it shall have the right for a period of 30 days after the tariff becomes effective under rules and regulations to be prescribed by it to order the operation of the rates to be suspended pending an investigation. This will give the shippers the opportunity to ascertain the nature and character of the rate changes and to present petitions to the commission for suspension if they feel that the changes should not be authorized. Also, it will give the commission a free hand and permit carriers to make changes on one day's notice where the changes are made to meet the competitive rates of other transportation agencies. It will not be necessary to make any changes in Section 6, Paragraph 3, of the act, which now requires that the public be given notice of rate changes. It will give the railroads an opportunity to put the rates in on short notice, and at the same time the public will have reasonable opportunity to have them set aside if it can make a *prima facie* showing to the commission that the changes appear to violate other provisions of the act.

After a discussion of the report of the general counsel of the Association of Railway Executives, which contends that if no power of suspension is to be exercised over rate changes which may be published by water and motor transport lines, the power of suspension of changes in railroad rates should be repealed, the league went on record as opposing the railroad's proposal amending Paragraph 7 of Section 15 of the act by attaching a provision that there shall be no power of suspension on the part of the commission of any rate filed by a carrier and contained in a tariff to which there shall be attached an affidavit of the chief traffic officer of the carrier that the changes in the rates are necessary to meet the competition of carriers not subject to the provisions of the paragraph. On the other hand, the league felt that an enlargement of that power would seem to accomplish in a large measure the purpose which the rail carriers have in mind. They would be permitted to publish rates on short notice to meet unregulated competition, and then if any shipper or other person could show that rates so authorized violate any provision of the act, the commission could suspend the rates at any time within 30 days after the effective date, and the rates would be investigated by the commission as in other cases of suspension orders.

Oppose Repeal of Provisions of Panama Canal Act

The league went on record as opposing the recommendation of the carriers that paragraphs originally numbered 9, 10 and 11 of the Panama Canal Act, prohibiting a railroad company or other common carrier subject to the act from owning, leasing, operating or controlling any common carrier by water operated through the Panama canal or elsewhere be repealed. The report of the Legislative committee stated that the repeal of such provision would enable the rail lines to destroy existing water competition in many instances. If the water lines are to have their rates regulated by the Interstate Commerce Commission, the report continues, then the danger would not be so apparent, but as the league has gone on record as opposing strict rate regulation of the water lines on port-to-port traffic, your committee believes that it should, in like manner, oppose the repeal of these provisions of the Panama Canal Act.

Co-ordination of Transportation

Following the report of a special committee on the co-ordination of the various existing forms of trans-

portation, in which the co-ordination of transportation considered by the federal co-ordinator was discussed, the league adopted the recommendation that a thorough survey be undertaken of regulation, so far as federal authority extends, of all forms of transportation—rail, highway, water, air or otherwise—in order to determine by what governmental agency or agencies, whether now in existence or to be created, such regulation may be most efficiently and co-ordinately accomplished.

Highway Transportation

In respect to highway transportation, the league adopted the following recommendations:

(1) That motor truck taxes should not be greater than an amount sufficient to pay their fair share of maintenance and cost of the improved highways, that motor vehicle taxation should be applied alike if on private and commercial vehicles of the same class, and that no penalty taxation should be exacted upon commercial carriers and no discrimination made in the taxation of common and contract carriers as distinguished from privately-operated vehicles;

(2) That the league oppose the exaction of special taxes by state or federal government on motor vehicles or commerce moving therein for purposes other than the construction and maintenance of highways and enforcement of regulation of highway carriers and commerce;

(3) That the league favor reciprocity between states and enactment of uniform state legislation governing the height, width and length, axle and wheel loads, and speeds of motor freight carriers along the general lines recommended by the American Association of State Highway Officials;

(4) That the league endorse the legislative principles embodied in the Rayburn Bill H. R. 3756 and urge their enactment by Congress;

(5) That the league favor enactment of federal legislation authorizing but not requiring the establishment of joint through rail-highway or rail-water-highway rates and routes, subject to the jurisdiction of the Interstate Commerce Commission;

(6) That the league is opposed to the inclusion in the motor truck code under the National Industrial Recovery Act of any provisions fixing or regulating rates for transportation, other than that the furnishing of transportation and rates which are shown to be below cost may be regarded as unfair competition;

(7) That the league is opposed to the establishment of any code governing the operation of motor trucks carrying the goods of their owners, not for hire, unless such operators are represented and have a voice in the administration of such code, and the league favors giving such private operators the option of operating their motor trucks either under such general motor truck code or under the code applicable to their industry;

(8) That the league affiliate with the National Highway Users Conference upon condition that no action taken by the conference is authorized by the league or commits or binds the league without the express authority of the league therefor;

(9) That the league, through its officers or the chairmen of its Executive, Legislative or Highway Transportation committees or its counsel, with the advice and approval of the President, be authorized to make such appearances and representations as may be desirable or necessary to carry out the purposes of these resolutions in the interest of the shipping public.

These recommendations which were presented by the Highway Transportation Committee, were supported by the following argument:

A comprehensive rate regulation of highway freight carriers is objectionable not only because of the difficulty, if not impossibility, of enforcement, at least without an army of men, but because freezing of the rates of highway carriers would increase the cost and decrease the flexibility and usefulness of their service to the public. Comprehensive information as to transportation costs by highway is lacking as a basis for establishing standards of rate making. There is such a vast difference in the character and cost of operations by the different vehicles and companies engaged in highway transportation that it is difficult to see how uniform rates could be fairly established. Discriminations and inequalities of transportation charges between shippers would probably be increased rather than diminished by legislation requiring highway carriers for hire to publish and adhere to rate schedules, because less than 15 per cent of the commerce on the highways is moved by carriers for hire. The remaining 85 per cent, handled in owner-operated vehicles, would have no restrictions on their rates or transportation costs and would, therefore, have undue competitive advantages over other shippers employing carrier for hire to move their freight.

N. R. A. Regulation Proposed For Railroad Competitors

WASHINGTON, D. C.

THE anomalous situation under which the railroads have been subject to strict federal and state regulation which their subsidized competitors on the water and the highways have largely escaped seems about to be giving way to another in which the railroads will still be subject to commission regulation under numerous laws while an attempt is being made to regulate other forms of transportation under National Recovery Administration codes. The new plan is commonly referred to by N. R. A. officials as one of "self-government" but it also partakes of the character of government regulation because the code authorities set up to represent the industries in the administration of the various codes also include non-voting representatives of the government, the extent of whose actual powers in practical operation remains as yet to be demonstrated.

The new situation is being brought about because it has been officially ruled that the railroads are not subject to the National Recovery Administration, while other forms of transportation service are. This is not specifically provided in the law but comes about because the N. I. R. A. did not undertake to repeal various laws pertaining to railroad regulation with which it is in conflict in many ways, whereas as to the other agencies of transportation the existing laws provided very little regulatory power with which the N. I. R. A. could conflict.

Many of those interested in the subject are looking forward to the new plan of regulation of rates and other matters by code authorities as a possible avenue of escape from complete federal regulation of transportation under the plan of co-ordination as to which Co-ordinator Eastman will make recommendations, while others regard it as merely an entering wedge toward regulation similar to that applied to the railroads, and as possibly a preliminary experiment in stabilization of forms of transportation which heretofore have developed excessive competition not only among themselves but with the railroads.

A beginning of the plan of code regulation has just become effective in the case of the motor bus industry, whose code went into effect on November 13, and a somewhat similar plan is expected to be extended shortly to the trucking industry, on which hearings were to begin on November 16, while the development of a code or codes for waterway transportation is going through the preliminary stages. Some of the problems being created by this procedure were strikingly brought out at a hearing on November 9 before Deputy Administrator W. H. Davis on the proposed code for the shipping industry which, after having been originally submitted by the American Steamship Owners' Association, has been tentatively revised in the N. R. A. in an attempt to include not only ocean shipping in foreign commerce but also intercoastal, coastwise, and inland water transportation, as well as that on the bays and sounds and the Hudson river, under a master code with divisional or supplemental codes for each of the various subdivisions.

This plan immediately aroused a flood of protest from the separate divisions of the water transportation business, many of which have either filed or are preparing separate codes.

Under these codes minimum wages and maximum

hours are prescribed but such rate regulation as is proposed is to be administered by code authorities.

The Bus Code

The bus code is to be administered by a Motor Bus Code Authority of seven voting members, of which five are to be chosen by the National Association of Motor Bus Operators and two from among operating representatives of passenger motor carriers not holding membership in the association, and not more than three non-voting members to be appointed by the administration, in which may be included representation for the employees.

Each passenger motor carrier is required to register its operations by filing a statement with the code authority setting forth the routes over which it is operating; carriers establishing any new motor bus operation or extension after the date of the approval of the code, October 31, are required to secure therefor a certificate of convenience and necessity, or permit, from each state in which such operation is conducted, but the administrator, on his own initiative or on the recommendation of the code authority, may grant exemptions as to the requirements for the submission of a certificate or permit in any case in which the refusal of any such certificate or permit by any state "has been clearly unreasonable and worked undue hardship."

Every passenger carrier, within 20 days after approval of the code, is to publish tariffs for services between all points on its lines by filing with the code authority at its office in Washington, as agent for the administration. Thereafter these tariffs must be adhered to but they may be changed by filing supplements or amendments at any time. The code authority is to have authority to require periodical reports from members with respect to revenues, expenses, wages, hours of labor, conditions of employment, number of employees, and other matters, and to recommend to the Administrator within 30 days a uniform system of accounting for the industry which upon his approval shall be used in furnishing the reports. Violation of any provision of the code is to be considered an unfair method of competition and offenders are to be subject to penalties imposed by the law.

Full recognition is accorded the effect of the state laws that regulate intrastate business, and it is neither the intent nor the purpose of the code to abrogate, change, or modify the effect of any state law with respect to strictly intrastate business. Within each state it will not supersede any state laws imposing more stringent requirements regulating the age of employees, wages, hours of work, health, fire, or general working conditions than those of the code.

Trucking Code

While the bus code does not provide for any actual rate regulation by the code authority, but merely for the filing of rate tariffs with it as an agent for the N. R. A., the proposed trucking code, on which hearings were to begin on November 16, goes a step farther by providing for the formulation of minimum rates and tariffs and practices in connection therewith, by trade agreements among the members of any territorial or natural group of the industry, assented to by the operators of a majority of the vehicles involved or carrying a major portion of the tonnage involved and approved by the appropriate code authority. When so approved such agreements would be binding upon all operators of vehicles for hire affected, unless within ten days more than half of those affected thereby but not assenting

thereto file notice of an appeal, in which case the code authority may determine whether the agreement shall become effective or be suspended pending final and binding decision by the Administrator.

No changes in the rates and tariffs set forth by agreement may be made by any party to such agreement except after a showing to the appropriate code authority that the proposed new rate or tariff is adequate and sufficient to meet the reasonable cost of the service to be performed, or that the change or amendment is to meet competition from some form of transportation agency not within the industry.

It is also provided that the minimum rates to be formulated by trade agreements are to be "directly related to and not more than rates and tariffs prescribed and approved by or on file with an appropriate state regulatory body for transportation by members of this industry," or "existing rates and tariffs of competing railroad services which are on file with the Interstate Commerce Commission or any other appropriate regulatory body." Such relations may be either a percentage relation or a differential in cents per hundred pounds. Such groups of the industry as cannot so relate their rates and tariffs may formulate trade agreements in which the rates and tariffs shall be based on the lowest reasonable cost of the service, and the National Code Authority, with the approval of the Administrator, is to determine methods and formulate rules and regulations in connection therewith to be used in arriving at such cost.

The proposed truck code provides for an average 48-hour week but would also allow longer hours for seasonal, emergency, or other special demands upon approval of the appropriate code authority. Provision is made to limit the reduction in earnings to follow from the reduction in hours but the rule is not to apply in territories where there is competition with "any form of property transportation outside the industry which shall have in effect reductions or alterations in tariffs filed with the Interstate Commerce Commission or any other regulatory body 'to meet truck competition,'" so long as such reductions or alterations continue in effect.

General Shipping Code

The general shipping code, on which hearings were held on November 9 and 10, goes still farther by providing for actual rate regulation by or under the direction of a code authority consisting of representatives chosen by various divisions of the industry and three representatives of the Administration, without vote, appointed by the President. Considerable objection was voiced at the hearing to the proposed method of apportioning the representation by those in various divisions of the industry that wanted separate individual codes, while representatives of the shippers objected strenuously to the idea of rate regulation. Provision is made for the "stabilization and regulation of rates, fares, and charges, and rules and regulations," under rather elaborate rules under which the code and supplemental or divisional codes are to be filed with the United States Shipping Board Bureau of the Department of Commerce, which incidentally is now in the executive branch of the government, as well as with the Administration. Members of the various divisions, by adopting supplemental and divisional codes, are to "prescribe rates, fares, and charges, and rules and regulations to be charged and enforced" by the members of the industry. Moreover, the proposed code defines "rules and regulations" to include, among other things, provisions governing matters of

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Railway Purchases and Standards*

Policies and plans of Co-ordinator for economies
in transportation explained to Western
Railway Club

By R. L. Lockwood

Director of Purchases, Federal Co-ordinator of Transportation, Washington, D. C.

THE Section of Purchases of the Co-ordinator's organization was established as a disinterested centralizing agency, of which one important function is to accelerate collective action on problems which concern all railroads in respect to the purchase and application of materials, equipment and supplies. It is immediately concerned with the general problem of standardization and simplification, the latter word being used in the sense of reducing unnecessary variety. In spite of greatly increased knowledge of this problem, there is still some fear expressed as to the danger of stagnation as a result of standardization. In its newest concept, standardization is not static. It stands for "improvement through change," but through orderly change, which encourages invention and development, but eliminates that which is merely different without being better.

The Section of Purchases is making a survey of existing standards to determine their value as measured by degree of adherence, and to point the way toward full utilization of those which appear important. Information regarding proposed standards is also being collected. No attempt will be made by this section to develop standards. Our policy is to work through existing organizations, including the various committees of the American Railway Association and certain organizations in the supply trade. Since all matters concerned with purchases are ultimately handled by officers who are members of the Purchases and Stores division, A. R. A., we expect to work continuously with that division. Technical standards for materials, supplies, equipment and methods usually originate with the using departments, which are in most cases represented by the American Railway Engineering Association and the Engineering and Mechanical divisions of the A. R. A. Standards may be developed directly by these organizations or submitted to them by manufacturers, but in either case must be approved by the committees directly concerned.

The Section of Purchases expects to recommend to the Federal Co-ordinator such standards as appear important from the standpoint of ultimate economy. In the majority of cases, these will be standards already approved by the A. R. A. in accordance with its regular procedure, which in turn implies that they have received a large majority of approval from the divisions immediately concerned. If approved by the co-ordinator, they will then be recommended to the regional co-ordinating committees of the railroads.

Mandatory Standards

Generally speaking, it is not difficult to secure a fair percentage of approval to any sound standard, but the maximum benefits cannot be realized until the standard

is universally used. While the Section of Purchases would not expect to recommend any standard which had not received a majority of approval in the railroad industry, there might be cases in which a standard should be made mandatory, if its effectiveness were endangered by the opposition of a small minority, after that minority had been given ample opportunity to present its views.

The same principles apply to simplification, which usually consists in selecting from existing standards those which are most important from an economic standpoint. For example, a certain item might be purchased by the different railroads in 20 different types or sizes. A survey might show that the great majority of purchases are confined to five types or sizes, and that concentration of purchases on those five will not only result in economy in handling, storage, accounting, clerical work, and possible reduction in total inventory, but might also result in lower prices.

If each railroad buys a certain item in only five sizes, and needs each size, it might appear that no further simplification could be made. If, however, the five sizes used by one road are not the same as those used by another, and this condition is multiplied by 50 or 100, the manufacturer's situation is the same as if every road purchased every size. The result is that the manufacturer might be unable to "make for stock"; that each order for a given size is small; and that consequently the price is high. If, on the other hand, the manufacturer knows that for a stated period all purchases of that item will be confined to a small number of types or sizes he can level his production curve and gain the benefits of quantity production. In competitive industry, savings will ultimately be reflected in selling price. This principle has been fully demonstrated in many industries outside of the railroad field. In the automotive industry, for example, it has been an important factor in reducing the cost of the product.

One fundamental principle of present-day standardization and simplification is that no standard can be considered permanent. It must be kept flexible at all times, in order to keep abreast of invention, development and changing conditions. This means periodic revision. In recommending standards for the railroad industry, the Section of Purchases expects to provide that each shall be reviewed at regular intervals,—in most cases, annually. If, for example, a standard is recommended today to be made effective on January 1, 1934, this standard would be in effect for one year thereafter. During that year, the committee which formulated the standard would accumulate all suggestions, criticisms and other comments regarding the value of the standard in use. At the end of the year a survey would be made to show whether adherence to the standard had dropped below the percentage of original approval. If so, modifications would be recommended by the committee in

* Abstract from a paper presented before the Western Railway Club, Chicago, on October 16.

charge, subject to approval by those who originally accepted the standard. The revised standard would then be effective for another year, and this procedure would be repeated annually thereafter. If the survey showed that the standard was effective, measured by adherence, it would be reaffirmed for another year. Experience has shown the necessity for such periodic review, even though the standard appears to be universally followed. A standard may be reviewed at any time, if some new development appears sufficiently important to warrant immediate consideration and possible revision of the standard.

Too Many Standards

The work of the new Section of Purchases will probably be concerned more with simplification than with technical standardization. Technical standards have already been developed for almost every item purchased by the railroads. Their development has been in the hands of experts, and in general the standards are adequate to provide for performance requirements. In numerous instances, however, there are too many standards for the same item or piece of equipment, differing from each other only in minor and unimportant features. Simplification of such items will have a direct effect on their final cost as applied in use. Work of this character has been carried on continuously by a number of railroads. In a single year one large system eliminated nearly 7,000 items from its stores stock, and in six years that same road eliminated about 22,000 items, reducing its inventory by more than \$2,500,000. Another system reduced its inventory by nearly \$18,000,000. In addition to the savings made through reduced inventory, corresponding savings were made in the cost of handling, storage, delivery, accounting, and all clerical work.

While an individual road can make substantial savings through simplification, there are many cases where far greater savings could be made through collective action of all roads. The Purchases and Stores division of the A. R. A. has co-operated for years with the Division of Simplified Practice of the Department of Commerce in effecting simplification of materials and supplies. Our studies will undoubtedly develop numerous possibilities along this line, which will be handled as rapidly as possible.

Five standardization projects have recently been presented by this Section to the Co-ordinator for recommendation to the Regional Co-ordinating Committees. We do not claim to have originated these projects, for each one covers items on which some work had been done by the railroads or other organizations before this Section entered the field. Three of the projects have been completed, so far as the work of the originating committees is concerned. These projects include the 50-ton steel single-sheathed box car, hard and softwood lumber, rail sections, rail joints and attachments, and simplified invoice forms. The last item has been approved by the Railway Accounting Officers Association. In each instance the technical work was done by one or more committees of the A. R. A. and represents a material reduction in variety of standards now in use.

Cross-Licensing Favored

A considerable number of items regularly required by the railroads are covered by patents, or require the use of patented devices in certain portions. This patent situation presents problems which are difficult to solve, but it appears probable that the practice of certain industries other than railroads can be applied successfully in this field. The automotive industry affords an outstanding example of the benefits to be gained to all concerned,

including the public, through a system of cross-licensing. A number of other large industries are following a similar plan. Generally speaking, such a plan provides that each patentee, whether a manufacturer or not, agrees to license all manufacturers of the product in which his patent is or may be used. Royalty arrangements are usually worked out separately in each case.

From the standpoint of the buyer the situation is thereby greatly simplified. If a standard is established involving the use of any patented device the buyer can get it from any manufacturer, and the public will get the benefit of new developments covered by patents. From the standpoint of the patentee the advantages have been demonstrated. In the vast majority of cases the amount of money a patentee could make by holding a patent for his exclusive use is greatly exceeded by the royalties received from licensees plus the money saved through eliminating patent litigation. In practically every case where this plan has been tried, those who have used it would not consider going back to the old conditions, where the cost of litigation frequently amounted to far more than any possible profits to be made by refusing to license competitors. We expect to explore the possibilities of such a plan in connection with a number of items in which the patent situation is now complicated, and will use our best efforts to bring about such agreements as will improve the situation both for the buyer and the seller.

A Research Bureau

Research and investigation of new devices is even more important to the railroads than to other industries, because of the sheer magnitude of the railroad business, if for no other reason. The railroads have already established certain organizations to do work of this character. The recent report issued by the A. R. A. under the title, "The American Railroad in Laboratory" attests to the great number of projects completed or under way. There is still a question, however, as to whether a central organization, using all necessary existing facilities, could not eliminate a considerable amount of duplicated effort on the many important problems in which all roads have a mutual interest. This subject has been discussed with many officers of railroads and supply companies, most of whom strongly favor the establishment of such an organization. The general consensus of opinion appears to be that some form of "Central Technical Bureau" should be established and should perform the following principal functions:

1. Investigation of new materials, methods and devices presented from all sources. Such investigation should include testing when necessary, and the results should be available to all railroads and other interested organizations.

2. (a) Development of standards for materials, equipment and supplies, including specifications, designs and construction. (b) Development of standard methods for use of the above. (c) Development of standard inspection and test methods for all railway materials.

3. Consolidated inspection, either by the staff of the Technical Bureau or through private organizations, as may be found most economical.

Such a technical bureau would not necessarily undertake "pioneer research," but would confine its work to projects suggested by the railroads or by equipment and supply companies or others interested. It is reasonable to suppose that equipment and supply companies can logically be expected to undertake the great bulk of pioneer research required. The development of new materials, methods and devices is an essential part of

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Remote Control on the Missouri Pacific

Interlocking at lap-siding replaced, saving \$5000 annually in operating expenses

THE Illinois division of the Missouri Pacific is double track for 91 miles between East St. Louis, Ill., and Howardton, except for 28 miles of single track between Flinton and Raddle. On this section of single track, there is a lap-siding layout at Ford, at which point a 20-lever mechanical interlocking formerly handled the switches and signals at the lap, while the switches at the far ends of the two sidings were remotely controlled from Ford. There are no automatic block signals on this territory, and trains are handled by time-table and train orders, Ford being a block office. At Mount Vernon Junction, two miles north of Ford, a single-track branch line turns off for the coal fields and Mount Vernon, Ill. In 1929 a power-operated switch and signals were installed at this junction, with the control located in the office at Chester.

In addition to local business, the Illinois division handles considerable coal from the Illinois fields to St. Louis, while all the heavy freight moving between St. Louis and southern points is routed over this line because it is on a river grade. The St. Louis-Southern also operates over this line. The traffic on this division includes 4 passenger and from 16 to 18 freight trains daily, with 2 passenger and 8 freight trains additional between Mt. Vernon Junction and Chester.

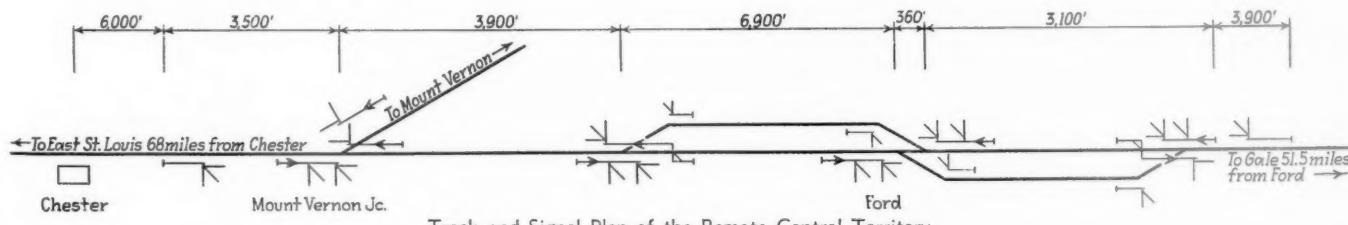
As Ford is only 4 miles from Chester, it was not necessary, for the purpose of handling trains, to maintain a block office at Ford. Therefore, it was decided



Two Trains Ready to Pull Out of the Lap Sidings

are No. 20, and the switch points are 20 ft. long. To avoid the possibility of locking the switch with an obstruction anywhere in the rear half of its length, and to be sure that the point completes its movement throughout its entire length, a pipe connection, with cranks, has been extended from the operating rod back to a second operating rod attached to the switch 12 ft. from the point. This arrangement assists in throwing the entire switch as a unit without springing the points. A switch circuit controller is connected to the second rod to check the position of this part of the switch.

The signals are the G. R. S. color-light type, the signals in advance of switches having two arms, with the top arm indicating Green, Yellow or Red for main-



to replace the mechanical interlocking with power switch machines and signals, and to control this Ford layout, as well as the one at Mount Vernon Junction, from one machine in the office at Chester. This permitted the office at Ford to be abandoned.

Remotely Controlled System

The installation includes five power-operated switches, five main-line two-arm home signals, four single-arm home signals, two single-arm distant signals, and four dwarfs. The two switch machines at the Ford lap are General Railway Signal Company's Model 5-B dual control, while the ones at the outer ends of the Ford and at Mount Vernon Junction are Model 5A, without the dual control.

The track through this territory includes 110-lb. rail, with tie plates on all ties and crushed rock ballast. The switches are well constructed, using insulated gage plates and heavy rail braces on seven ties. The turnouts

line train movements, while the lower arm indicates Yellow or Red for a movement into a turnout. The dwarfs, which are used for directing train movements from the sidings, indicate Yellow or Purple.

The control board in the office at Chester includes five levers and an illuminated track diagram. Each lever consists of a double-pole, double-throw knife switch, which is normally in the mid-position, and is thrown to the up-position for a main-line movement, and down to control a movement in or out of a siding. The signals are automatic and depend on the position of the track switch and on the direction in which the train is approaching. The passing of a train over a switch is indicated by an OS light and bell.

The abandonment of the interlocking and block office at Ford effects a saving in operating expenses of about \$4,966 annually. The cost of the changes totaled about \$13,000. This installation was designed and installed by signal department forces of the Missouri Pacific.

N. R. A. Regulation Proposed For Railroad Competitors

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service frequency, limitations of tonnage, duplication of services, and excess competition, if approved by the code authority.

Most vigorous objection was made by representatives of the carriers on the Great Lakes and other inland waterways and other separate branches of the water transportation industry to inclusion under one general code, because of the many differences in conditions and because some of such carriers are partly subject to regulation by the Interstate Commerce Commission or are in competition with railroads that are, while some of the ocean carriers pointed out that they are in competition with foreign shipping that could not be brought under the code. Many of the speakers objected to any rate regulation, although most of them wanted separate codes for the various divisions and even the government Inland Waterways Corporation expressed a desire to comply with all conditions of any code made applicable to other inland waterway carriers.

Thomas Q. Ashburn, speaking for his father, General Ashburn, said the latter had announced that although General Johnson had advised the Inland Waterways Corporation that the President had ruled that being a government corporation, it was not included in the N. I. R. A., the corporation proposed to operate just as if it were under any code that might be adopted and desired to comply with all its conditions. It was stated that the Mississippi River Carriers' Association was in process of formation and desired to submit its own separate code but several of the representatives of river carriers insisted that it would be impracticable to regulate their rates in competition with the railroads now that the Interstate Commerce Commission is allowing the latter to make so many reductions on short notice. Others asked that the matter be postponed until after Co-ordinator Eastman has made his recommendations.

Deputy Administrator Davis announced that the Administration would make every effort to proceed with the consideration of the detailed provisions of the separate codes which have been filed and doubtless would set them for separate hearings and conferences, but that it would reserve the question of the co-ordination of the various units under one master code until a later date. A hearing had already been announced for the inland water carriers of the eastern division of the United States for November 27. Later he added, however, that he would be obliged to consider the whole matter from the national standpoint and that "an opportunity is presented to proceed with the development of a co-ordination of the whole shipping industry of the United States from top to bottom." He thought that opportunity should not be neglected. He said that Congress had provided for a consideration of a co-ordination of all transportation by Mr. Eastman, looking forward to recommendations for legislation for a "rationalization of all transportation in America," and that there are valid reasons for at least an experiment in self-regulation in the shipping industry if only to enlighten Mr. Eastman and Congress. "I think I can say for the Administration," he said, "that it is keen to proceed with this industry as far as possible toward its own self-regulation, leaving for the future what may be done under a general plan of co-ordination."

W. R. Seaton, appearing for the Pere Marquette, which operates car-ferryes as part of its railroad operations, asked to be excluded from the general code on the

ground that such operations are under the jurisdiction of the Interstate Commerce Commission and subject to the railway labor act. W. R. C. Cocke, general counsel of the Seaboard Air Line, speaking for the Baltimore Steam Packet Company and also for the water line subsidiaries of the Southern, the Atlantic Coast Line, the Central of Georgia, the New York, New Haven & Hartford, and the Southern Pacific, asked that they be excluded because they are already so subject to the jurisdiction of the Interstate Commerce Commission and the Co-ordinator that a direct conflict of authority would be created by including their operations within the provisions of a general shipping code. He said they were in active competition with other ocean shipping, and also with busses and trucks. When he said, however, that the water subsidiaries of the railroads are not under the railway labor act, Deputy Davis asked if they should not be made subject to the same labor provisions as other shipping and asked Mr. Cocke to consider that in his brief. He said, however, that the Administration would consult the commission and the co-ordinator as to the question of exclusion of the railroad water lines.

In recommending approval of the bus code to the President, Administrator Johnson took occasion to express his sympathy because of the "disadvantageous competitive position" of the bus industry with "other passenger carriers," saying that "the taxes of its principal competitor, the railroad, have increased but 25 per cent since 1919 as contrasted with a 500 per cent increase in the case of the motor bus industry." Apparently this was stated as one of the reasons for fixing the maximum hours of employment for bus operators at an average of 48 a week, with provision for a maximum of 54 hours during any three-month period. "To adopt a schedule of less hours at this time," he said, "would result in a great hardship to the industry."

Railway Purchases and Standards

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their work if they expect to continue in business. It is only an incidental part of the work of the railroad officers who serve on the various technical committees. A railroad company is not in the manufacturing business, and its true function in respect to new development is to measure the value of items proposed for its use. This by no means implies that railroad men should not be encouraged to make suggestions gained from their own experience in regard to developments needed in the railroad business. A Central Technical Bureau, however, would provide the means whereby ideas and suggestions from all sources could be handled effectively.

Almost from the day this Section was established it has been flooded with suggestions regarding improvement in the railroad business. Most of these suggestions fall into two general classes; first, suggestions in regard to standardizing and simplifying specific items purchased by the railroads, and second, suggestions regarding the purchase of new materials and devices of every kind, and new methods for performing certain functions. We are carefully considering every suggestion that appears to have any merit, and are taking up with the various Committees of the A. R. A. those which seem practical and likely to result in economy. We will welcome all suggestions along this line and will use our best efforts to make effective those which show real possibilities for eliminating waste.

Whither Co-ordination?*

Some requisites for the formulation of a national transportation policy

By John R. Turney

Director, Section of Transportation Service, for the Federal Co-ordinator of Transportation

AS a participant criminis to the plague of questionnaires which recently has been unleashed in your general direction, it may be appropriate to answer publicly the questions most frequently hurled at me privately: "What's all the shooting for?" and "What are you trying to do?", especially since it may be that some of you have the same concept of co-ordination that I had last spring—that, like regulation, it was just another word which rhymed with damnation! There is danger in attempting either to over-simplify or to under-simplify the answer to these questions. While they go to the very roots of the transportation problem, they must be answered from a forest rather than a tree perspective of that problem.

Land transportation has been the keystone of the development of civilization upon this continent. Until it came, America continued a thinly populated fringe along the Atlantic Seaboard for three hundred years. With its advent our nation in less than one-third that time achieved one of the greatest civilizations and at the same time one of the few (if not the only) inland civilizations.

The Interdependency of Railroads

Beginning as a miscellaneous collection of local dray lines operating on fixed tracks the American railroads have ever kept pace with, indeed have set the pace for, continued expansion, development and consolidation of territory, of industry and of commerce until today their physical properties and facilities have been welded into a single machine, just as our transport has been integrated into a single function. Few railroad activities are local, and there are few, if any, railroad acts the repercussions of which are confined to the actor. No railroad can live alone—none can exist solely on its local traffic. Fact number one to be faced is the interdependency of railroads upon one another.

Railroad organizations unlike railroad instrumentalities so far from becoming integrated have retained complete autonomy. Despite their mutual dependency upon each other and the resultant imperative necessity for complete co-operation our railroads remain largely independent units. This anomalous situation is partly due to blind adherence to a fetish for unrestrained carrier competition, and partly to the fact that each railroad organization is financially answerable only to its own stockholders, and must build up its own traffic and earnings without regard to the effect upon other companies. By reason of this fact the viewpoint of a railroad organization has been and is necessarily provincial and largely limited to the particular territory which it serves.

This condition has been aggravated within the recent past by the diversions of traffic to other means of transport—pipe lines, power lines and, still more recently, highway carriers, many of whose activities are not restricted by public regulation to the same degree as the

railroads, and also by a disturbance of traffic flow due to unification under the consolidation provisions of the transportation act.

This diversion of traffic in many cases has resulted in the duplication of rail facilities and services, particularly by smaller or by marginal carriers. The net result is an overproduction in transport facilities at the very time when national economy demanded that exactly the opposite course, at least with respect to railroads, should be followed.

Present Conditions Chaotic

With the depression came the harvest! Present transport conditions can scarcely be defined by any more optimistic adjective than chaotic. The influence of market competition—perhaps the most wasteful of all forms of competition—continues with unabated force. The situation resembles a spectacle sometimes held in the South called a "Battle Royal" in which ten or fifteen pugilists of various weights and sizes fight in the same ring until all but one are knocked out. The railroads, trucks, pipe lines, water lines are indiscriminately fighting in the same arena with and between one another, no holds and no weapons are barred but all rely chiefly on bowie knives! Most of the contestants are being bled white. The industrial and economic development of the country is threatened, carrier securities and credit are at new low ebb, and those carriers which have not felt the sheriff's hand, have felt his breath. Fact number two to be faced is that transportation progress is imperiled through the failure of transport organizations to integrate.

The Emergency Act of 1933 was passed in recognition of both these facts. It proposes to remedy the evils by bringing order out of disorder—to stop the "Battle Royal" while the contestants are still alive. For this purpose a small organization has been created under a Co-ordinator to serve as the corridor through which the transportation industry can reorganize itself. An important duty of the Co-ordinator is to develop a national plan for the integration of transportation. Since the need for expedition in carrying out this job brooks no delay, the Co-ordinator is enlisting the co-operation of shippers, railroads, highway and water operators in collecting the data and suggestions necessary to formulate such a plan. This is the "why" of the questionnaires—Now for their objectives.

An Appraisal of the Job

The first prerequisite in the formulation of a national plan is an appraisal of the job to be performed by the transport machine. The volume of the traffic to be handled, its origins, destinations, commodity and seasonal movements must be determined, the present routes and channels over which it flows, its service requirements with respect to dependability, speed, convenience in facilities, schedules, and accessory services, and size of sales units to be moved must be ascertained, reasons which led to the

*Address Before The New York Railroad Club, November 17.

use of one transport agency in preference to another, limitations with respect to the charges which the traffic will bear from the standpoint of market competition both domestic and foreign and within narrow limits from the standpoint of customer buying power, must be analyzed.

Much of this information must come from shippers themselves. To date their response has been magnificent. Nearly forty-thousand replies were received to the Merchandise Inquiry. Over thirty-five thousand gave detailed information about a total tonnage over sixty million tons of merchandise.

The next requisite in the formulation of a national plan is a survey of available transport facilities to determine the capacity and suitability of each type of carrier and the manner in which each can best be made a part of a co-ordinated system. The roadways of each, the effect of increasing or diminishing the load thereon, the capacity and location of terminals, and the vehicles used must be examined both to appraise the potentialities and limitations of each for improved service and to explore the possibilities of minimizing the waste of duplicate or uneconomical facilities.

The Problem of Dead Weight

An outstanding problem is reduction in the enormous dead weight which the railroads haul about the country, representing as it does over twice the weight of the revenue freight handled. The problem must be attacked from three angles:—better design, lighter materials and more economical utilization. Thorough investigation must be made to find improvements which will make our cars more generally utilizable. Suggestion has been made that consideration be given to box cars which can be loaded through the roof. Such cars would greatly reduce loading cost as well as make the car of greater general utility. Cars of this type have been used successfully in Sweden and South America. Other suggestions are closed topped gondola car and hopper-bottom box cars. We must lend an attentive ear to the metallurgist who now proposes to use the new steels, alloys and the aluminum with which he has worked wonders in other industries, in railroad car doors, roofs, sides and perhaps even in floors and underframing.

Mechanical devices which will reduce the impact shocks of present draft gears and those due to our brakes or which will overcome the destructive effect of continuous spring vibration, thereby eliminating the need of tornado-proof packing requirements, are among the many improvements which are claimed to be ours for the asking and all of which merit, indeed demand, thorough and unbiased investigation.

A most serious problem which confronts us is the fact that the container offered rail patrons does not permit the movement of goods in sales unit quantities desired by the consumer. The great box car of today may be ideal from the railroad standpoint if and when it is fully loaded, an event rare indeed in this era of hand-to-mouth buying. At the threshold of rail-highway co-ordination is the problem of equipment which is easily interchangeable between railway and highway. Such equipment is now available in a large number of designs, some of which have been in practical operation for some years past.

The next field to be investigated is that of the service rendered by the several transport agencies, speed convenience and completeness.

Faster Service Demanded

Of vital importance is the question of speed. Not only are our files replete with instances where large vol-

umes of traffic are moving by less economical means solely because of the difference in time, but answers to the merchandise questionnaire show that 73 per cent of all the tonnage which moves by truck does so partly because that service is faster. Although manifest trains move in road service at a rate much faster than possible by any other means, the average loaded car spends but a fraction of its time in such trains and dawdles away the remainder in terminals. Ways to eliminate this stagnation in the traffic blood stream can and must be found, not only to improve the service but to cheapen it. We must completely dissect our movements of cars and find what they are doing in the terminals. Results of experiments which have been made in a number of cases indicate splendid possibilities of speeding up service by the co-ordination of rail and highway facilities. This field must be explored thoroughly and with an open mind.

Among the greatest of time killers are our old friends the interchanges. Not only does the actual movement consume time which could be much more advantageously used on the road, but since the schedules of each carrier are made largely to fit its own conditions, they frequently fail wholly to fit in with the schedules of its connections. On the other hand, there are many cases where carriers by co-operative scheduling have entirely eliminated these delays. The field is pregnant with possibilities, among which might be named the limitation of interchange points and restrictions against specification of junctions in routing.

Answers to the shippers' merchandise questionnaire indicated that 61 per cent of the truck utilization was due in part to greater convenience and flexibility in the service. The large train units in which railroads move freight place decided limits upon the flexibility or convenience of schedules. Consideration must be given to joining other carriers in staggering schedules, to the use of light inexpensive special service or express trains, and possibly to utilizing trucks for special movements.

One of the most heated controversies of the day rages about the question of complete service from the door of the consignor to the door of the consignee. All of the heat and most of the controversy is due to the perfectly natural desire of those carriers which have the bulk of the industries at a given point to avoid opening up their preserves to the newcomers, and an equally natural desire upon the part of the newcomer to get into the pantry. Once this traffic angle is settled by integrated policy the row will soon be over. For years the carriers have given store-door collection and delivery service of carload freight without additional charge to on-track shippers. In numerous cases before regulatory commissions it has been claimed that the expense in operation and capital required of the carrier in rendering this service is very large and in fact may equal or exceed the cost of trucking the freight to or from the rail head. The motor truck has forced the issue by extending exactly the same service to off-track shippers as the railroad extends to on-track shippers. The result is that the trucks have made relatively larger inroads into the carload traffic of off-track shippers than into the traffic of on-track shippers. These losses are particularly severe because the off-track patron frequently is a commercial house handling higher-rated traffic. This situation must be examined entirely without heat and without prejudice, from the standpoint of the on-track shippers as well as off-track shipper and from the standpoint of all carriers, highway as well as railway, to discover the defects, if any, in the present system and the possibility as well as the cost of changing it.

A field of inquiry indispensable to a sound national

plan is that of the cost of transportation. It is as broad as it is important. At the threshold of any transport movement is the cost to which the shipper is put in making the shipment ready—billing, routing, packing and loading. The claim is made often that these costs equal and even exceed the entire freight bill. It is necessary to find out what these costs are, how and why they accrue and what the carriers can do to reduce or eliminate them.

Closely analogous to these costs are those of collection and delivery to which I have already referred. Part of these costs are borne by the on-track shipper in some cases and all of them are borne by the off-track shipper in all cases of movement. Statistical generalizations indicate that at least forty per cent of the costs of transportation accrue within yard limits of terminals. These yard services embrace classification, transfers, interchanges, collections and deliveries on house, team and industrial tracks, and accessorial services. The cost of each of these various elements must be segregated in order to compare them with the cost of accomplishing the same results by other means and methods. The claim is made that trucks, before or after a road-haul, can originate or terminate fifty-thousand pounds or more of carload traffic at less than one half the comparable railroad cost.

If this be a fact, it must be faced and either the rail method improved and cheapened or the truck method adopted. Before the fact can be faced it must be ascertained.

The quite general claim of operating men that we are paying a heavy price for the speed of our red ball or manifest trains warrants thorough investigation, particularly when we remember that apparently a large amount of the time gained by that speed is squandered in the terminals. While we are breaking down line expenses to get the relative cost of manifest and drag freights, let us not overlook that mid-victorian relic, the way freight, nor fail to seek ways and means to cause the cost of train switching to disappear. Along with these railroad cost studies we must make like analyses of similar or related activities of highway and water transportation.

The Co-ordinator has nothing to do with the regulation of rates under the commerce act, in so far as "reasonable levels" under Section 1 or "discrimination or preference" under Sections 3 and 4 are concerned. These are questions solely within the jurisdiction of state and interstate commissions. Upon the other hand, the question of charges and rate levels (as distinguished from particular rates) is vital to a national plan of transportation.

Rates

A controlling factor which is strangely ignored in public discussion of highway carrier regulation is that the real competition which all carriers, highway as well as rail, must face is the potential ability of any prospective customer to provide his own freight transportation by his own equipment just as he is already largely providing his own passenger transportation. If you will chart the cost of handling by highway for various distances, loads varying from 5 to 30 tons, the rail carload rates charged for the same service, and the railroad gross and out-of-pocket costs of providing that service, you will receive several shocks, most of which prove unpleasant.

When we can chart these curves accurately—which will be after a detailed analysis of truck and rail costs—it will be possible to ascertain with accuracy the spread in carrier rates which is economically possible under modern conditions.

At present carriers are all more or less at the mercy of the shipper with respect to what rate reductions are necessary to recapture or prevent traffic moving by the shippers' own vehicles. Suspicion is quite rife that generally the shipper has been merciful—to himself.

In connection with the consideration of the type of containers or cars necessary to meet the sales unit requirements of the shipper, study must also be given to the preservation of the economies of tonnage train loading which have made our operations so efficient in the past.

The claim is sometimes made that the actual, as distinguished from the apparent rate levels of the several rate-making territories do not in the aggregate materially differ. Should the facts substantiate this claim, drastic simplification in classification and tariffs would become possible. These changes of course would be brought about by the carriers over a period of time and would aid greatly in integrating the industry and in reducing the evils of market competition.

The greatest opportunity for good lies not in the co-ordination of these physical instrumentalities but in the integration of carrier organizations, methods and practices. Our administrative, operative and sales methods and organizations must be critically analyzed to develop ways and means by which the many conflicting organizations now separately attempting to perform a single function can be co-ordinated into an integrated industry. This will require co-operation to an extent which, to some of us, may appear extreme, and realization that the interest of the individual carrier can best be served by those policies which are best for the industry as a whole. This does not mean co-operative huddles to stifle initiative, progress and enterprise. While it will require common counsels of transport policies, it does not mean limiting the industry to the mental capacity of the slowest and most self-satisfied member.

Not a Snooping Expedition

The job which the Co-ordinator has laid out is a big job and a carrier job. It is not a snooping expedition. Its purpose is not fault finding but fact finding. To be successful it demands full-hearted support from carriers and shippers alike, particularly as June 15 next is our deadline, in view of which every investigation, every return, and every analysis has already been scheduled and programmed.

We must look at the problem objectively; must unflinchingly face the facts as they are developed. Neither prayer nor profanity will do this job and both must give way along with passion and prejudice. The formulation of a national plan should comprehend all agencies of transportation, should co-ordinate each upon the basis of its inherent utility and potentiality for service, should make possible a system designed from the standpoint of facilities, equipment, speed, completeness of service, to give the best possible service at the cheapest possible cost to our nation in times of peace and in times of war to provide an efficient weapon for its national defense. Such a plan should search out and ascertain the methods, rates and charges by which the greatest benefits can be received by the country, and the greatest financial stability attained by the carriers. It should seek also the means by which, while encouraging the maximum use of each transportation facility within its proper sphere, the use of such facility will be confined within that economic sphere. If and when this ideal is realized, there need be no fear of the future of the railroads. Not only will they continue to be the backbone of our nation's economic and financial structure but they should provide a large part of its strength and sinew.

Communications and Books . . .

Shorten Hours, Raise Wages on Trucks, Engineman Urges

ROCKY MOUNT, N. C.

TO THE EDITOR:

From information received it seems that the railroads are financially interested in the bus and truck lines; therefore they are in favor of legislation favorable to them. From the indifferent attitude and poor fight they have put up I am inclined to believe the report. But there are a great many others who are not financially interested in the motor industry and it is our duty to fight that much harder than the railroads may live. I have spent 33 years on a locomotive as fireman and engineer and when my wages, hours of service and living conditions are threatened if I did not fight I would be a poor specimen of humanity.

The railroads are not whipped yet, if those that are affected will only get out and fight. If we can show under what conditions the truck and bus industry operates—the long hours, the low wages, the accidents—in fact collect all the evidence and present it to the proper authorities, I am sure a change will be made that will react to the benefit of the railroads. The truck and bus industry will soon come up for consideration before the NRA and it is up to those affected to collect all the evidence—such as long hours of driving without sleep, the poor wages paid, the accidents in which trucks are involved, the deaths and injuries, the violations of all highway laws and the growing resentment of the traveling public to the enormous trucks and sleepy drivers encountered on the highways. The growing toll of accidents should be reduced and if barring sleepy truck drivers and huge trucks will reduce this list, it should be done. From the test of bitter experience the railroads have found that it does not pay to have employees with bodies fatigued and minds dulled by loss of sleep in charge of the trains. Laws have been passed that insure that trains are manned by alert crews that have had adequate rest before starting on the trip.

The record of only four passengers killed on the passenger trains of the whole United States last year is proof positive of the benefit of this policy. In the same year there were 1,005 people killed on the highways of the two Carolinas. Last month 88 people lost their lives on the highways of North Carolina to say nothing of the hundreds injured—some of them rendered helpless for life. We don't know—we never will—how many of these lives lost could be charged to sleepy truck drivers but we do know the highways are full of them. Just as an illustration: a train leaves Florida; on an average of each 150 miles the crews are changed and a new crew replaces those that have been on duty. This requires a change of crews about seven times for the trip to New York. A truck leaves Florida and continues on through the day, through the night, through the blistering sun of the next day, until New York is reached in some 43 hours on duty. And then without rest they start on the return journey, a menace to other users of the highways. Now just suppose these trucks were regulated as to hours of labor same as the railroads? How many thousands now idle would have a job driving a truck?

The question naturally arises, if the railroads go into the truck and bus industry will they be regulated as they are now or will they be allowed to force their drivers to work 43 hours without rest? (I use the word *force* as no driver enjoys the punishment of working while fatigued for lack of sleep.) For the last nine years Colgate University has conducted experiments in its sleep laboratory and has found that it is impossible to obtain restful sleep where there are blinding lights and the roar of the traffic. (See "Macleans" for December 1, 1932, "Readers Digest," February, 1933.) And in the face of this evidence two men are allowed to drive a truck, one driving, one trying to sleep on the driver's seat, on our highways. In Ohio before the Public Utilities Commission one truck driver testified he drove a truck 72 hours with only six hours rest and that he obtained by lying down in the body of the truck (Public Utilities Commission vs. Patten).

In a letter C. D. Farmer, captain of the North Carolina State

Patrol, dated June 6, 1933, says: "Having had the experience of driving a truck, especially a heavy one, I know it is a hard job, and after a man drives a truck 8 hours, he is completely worn out and his mental facilities are not functioning properly." Captain Farmer is in favor of a law limiting truck drivers to eight hours driving. A short while after, the Corporation Commission issued an order prohibiting drivers of franchise trucks from being on duty more than 14 hours out of the 24. It is time to have laws passed that will control these greedy bus and truck owners from forcing their drivers to work such long hours that the highways are unsafe for travelers who have every right to believe they can go upon them without fear. It is time to see that truck drivers obtain a proper wage for their work that will enable them to go to a hotel or some such place and obtain a restful sleep. An investigation will show that this is not possible under the pitifully low wages they now receive. The country is losing taxes which the railroads are not able to pay until the schools are affected and teachers are not earning as much as girls in the factories. This town has lost 2,200 railroad employees due to competition of the buses and trucks. If this number of men averages \$5 each in taxes per year to the town then the buses and trucks caused a loss of \$10,000 of public income. This was once a live town where firms fought for an empty store. Now there are many empty stores and houses all over with "for rent" signs upon them.

I can't see where the trucks helped this town. I can't see where they helped the farmer, judging from his condition of today. Glutted markets have lowered the price of his products until his cries to the government for aid sound all over the land. The railroads do not ask for any unfair advantage or favors. They only ask that the truck and bus industries be controlled as they are. I believe if the proper evidence is collected, and presented at the proper time to the authorities that some action will be taken.

My suggestion is that laws be passed limiting truck drivers' hours, that no driver be allowed to obtain his so-called rest in a moving vehicle, that traffic and city policemen be instructed to arrest all over-sized and overloaded trucks, that buses be made to observe the speed laws, and that an impartial survey be made of the wages paid to the drivers. Abe Lincoln freed the black slaves. Now who will rise up and free the white slaves? For no slave in history—no convict—was ever forced to work the long hours that truck drivers are forced to work in these days, while millions are standing idle unable to get jobs. If the present Administration wishes to put some of these idle back in harness, I know of no better method than reducing the long hours a truck driver works.

ARTHUR SUTTON.

New Book

Stop, Look and Listen, by David Hinshaw in collaboration with W. Espy Albig. 293 pages, 9 in. by 6 in. Bound in cloth. Published by Doubleday, Doran & Company, Inc., New York. Price \$2.50.

This study which is sub-titled "Railroad Transportation in the United States" was prepared under the auspices of the Commerce and Marine Commission, American Bankers Association. Off to a good start with its two interesting introductions—one by Thomas F. Woodlock, former Interstate Commerce Commission Commissioner, and the other by W. N. Doak, former Secretary of Labor—the book proceeds, with an ease of style, to its concise, non-technical presentation of the railroad problem. It considers, among others, such subjects as the railroad and public, competition in the transport field, competitive waste among railroads, labor and public relations policies of the carriers, regulation and the Interstate Commerce Commission and the importance of an adequate rate structure. The authors, Mr. Hinshaw says in his preface, have tried to examine the railroads and the railroads' problem with minute care, as well as with adequate perspective; after an endeavor to see through the eyes of all partisans they have sought a fair middle ground for each conclusion set forth.

Odds and Ends . . .

They Didn't Travel by Train

Due to the fact that the out-of-town performers chose other means of transportation to Halifax, N. S., putting on the show, "Notions of 1933," at the Nova Scotia exhibition was attended by considerable difficulty. Twelve chorus girls enroute from the Bloomsburg Fair to Halifax were halted at Bedford, Pa., when their bus was sidewiped. Five of the girls were injured and all the wardrobes were destroyed, so this act was cancelled. Two French clowns and one member of the musical ensemble were delayed at Moncton, N. B., when their car was wrecked. They finally arrived by train, but too late to go on. The two performers in a specialty act arrived on another train, reporting that they were late because their automobile had overturned at Moncton. A trio of adagio dancers thought they were going to miss the opening, too, when their car was ditched in Maine, but they made hurried repairs and drove steadily for 36 hr. to reach Halifax in time.

An Unnoticed Collision

A collision, of which neither the train crew nor the driver of the automobile involved had any knowledge until some time later, occurred recently on the Northern Pacific near Fargo, N. D. Henry Frost, a farmer living near Hazen, N. D., drove his automobile and a trailer over a crossing 250 ft. west of the station at that point without noticing that a train was almost upon him. The locomotive struck the four-wheel trailer squarely. But not until they stopped at the Hazen coal dock did the engine crew, finding two wheels of the trailer on the engine pilot, realize that they had been in a collision. Similarly, it was not until he reached home and discovered that his trailer was missing, did the farmer comprehend that anything out of the ordinary had occurred on his journey. His case was little different, however, from that of many motorists who fail to exercise caution at railway crossings. Many of them, too, never know what hits them.

More Tongue-Twisting Station Names

WOONSOCKET, R. I.

To THE EDITOR:

Some weeks ago, attention was called to the potential difficulties of train announcers in New Zealand. A job there would be peaches and cream compared to Central Africa, as witness some of these African names:

Stations Kambove to N'Gule, Chemin de Fer du Bas-Congo au Katanga: Luambo, Mulungwishi, Mutaka, N'Guba, Fungureme, Kawtebala, Tenke, Tshilongo, N'Gule.

Stations Tengeni to Buiko, Tanga Line, Tanganyika Rys: Kihuhwi, Mnyusi, Korogwe, Ngombezi, Maurui, Makuyuni, Mombo, Masinde, Mkumbara, Mkomasi, Buiko.

Stations on Kenya & Uganda Railways main line: Kwa Jomvu, Ndara, Ndi, Tsavo, Dwa, Mtito Andei, Ulu, Ainabkoi Myanga, Mbulamatii (junction station), Jinja, Nsinze.

There is a station called "Equator" on the K. & U., 514 miles from the sea, between Nakuru and Eldoret. All trains stop there, the twice-a-week mail for three minutes. It is actually on the equator. And when it comes to jawbreaking names, the Madras & Southern Mahratta and the South Indian in India bow to no one. The names in this letter have been carefully copied from time tables of the railroads involved, which I have in my collection.

BUELL W. HUDSON.

The First Gas-Electric Rail Car

Gas-electric rail cars, fore-runners of the high-speed, streamlined trains now under construction for the Union Pacific and the Burlington, are by no means as new as many people think. The first gas-electric rail car made its initial run on the Delaware & Hudson between Schenectady, N. Y., and Saratoga, on February 3, 1906, nearly 28 years ago. Outwardly, this pioneer looked like a standard combination baggage and passenger coach, although what appeared to be the baggage compartment actually contained a gasoline engine direct-connected to a dynamo, with cables leading to the motors which powered each truck individ-

ually. The water-cooled gasoline engine employed developed 160 horsepower. No attempt was made, on the 44-mile trial run, to determine the car's maximum speed, which was variously estimated up to 75 miles per hour. The purpose was to ascertain whether or not the gas-electric car could maintain the regular passenger train schedule between Schenectady and Saratoga, calling for a maximum speed of approximately 45 miles per hour. The schedule was maintained without difficulty, although the car probably did not exceed a speed of 50 miles per hour at any time.

Pullman Veteran Still Carries On

Like old soldiers, old railway coaches never seem to die; they merely fade away. At least, this is the thought expressed by the press department of the Canadian National in announcing the discovery that a 61-year-old Pullman sleeping car is now doing duty as a general storehouse on the western shore of Hudson Bay. The records show that this ancient Pullman was built in August, 1872, and was named the "Conway." It ran on the old Eastern Railroad of Massachusetts until 1880, when it was remodeled and given the new name of "Capitano." In its rehabilitated state, it boasted a barber shop and a bathroom. In 1904, "Capitano" was sold to some one who wanted a private car and at a later date it was again renamed, this time "Marlborough." From then on, it drifted from one place to another until it finally came into the hands of a railroad contractor and through him to the Canadian National, which transformed it into a business car for the chief engineer engaged in the construction of the Hudson Bay Railway. The car has now outlived its usefulness even for that purpose and, a mere shell of its former self, it serves as a storehouse on the railway at Canada's most northern port, Churchill.

* * *

The Thrill That Comes Once in a Lifetime : BY WEBSTER



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NEWS

Terms of Railway Loans Still Under Discussion

With security question they remain in stage of negotiation between carriers and P. W. A.

The government's plan to loan money to the railroads for the purchase of rails, under the allotment of \$51,000,000 for that purpose approved by the Special Board of Public Works and the President on November 2, is still in the stage of negotiation between the railroads and the Public Works Administration as to the terms of the loans and the question of security. No new announcement as to the detail terms has been made since the general announcement on November 2 as to the fund allotted for rail loans and the general terms on which the P.W.A. will buy equipment trust notes at 4 per cent from such roads as need equipment. While it had been understood that loans for rail purchases were to be made on the promissory notes of the railroads it has not yet been definitely determined that the administration will not ask collateral security.

One change in the plan for rail purchases has been made by which the railroads will place their own rail orders and are themselves asking prices on the fastenings. In Co-ordinator Eastman's original announcement of the plan, in a letter to the executives of the steel companies on October 3, it was contemplated that he would, upon receipt of the prices quoted by the steel companies, undertake the allocation of the orders among the steel companies, after consultation with the railroads and with the object of obtaining the rails at the point of use at the lowest total cost, including transportation. He did not ask for prices on fastenings at that time, saying it would be left in abeyance until the rail questions had been determined. Some of the roads have placed rail orders or asked for bids and as to the fastenings it is understood that they are being quoted the uniform prices filed with the American Iron and Steel Institute under the N.R.A. code for the steel industry.

No new formal applications have yet been received by the P.W.A. for loans for the acquisition of equipment, since that of the Pennsylvania filed on November 2, although it is understood there have been some further preliminary discussions. The only application for a rail loan so far made public has been that of the Chicago, Milwaukee, St. Paul & Pacific filed with the Interstate Commerce Commission last week. The Pennsylvania did not ask a loan for rails. The public works board acted promptly to approve in general

terms a loan of \$84,000,000 to the Pennsylvania for electrification and freight cars by allotting the amount within two hours, but further negotiation was required as to the details of the contract, which, as in the case of the rail loans, must be satisfactory to the Administrator of Public Works. The Administration submitted a proposed form of contract to the Pennsylvania last week and it has since been under discussion. The Interstate Commerce Commission has issued regulations under which any receiver of a railway company, or any trustee appointed under the provisions of the bankruptcy act, seeking a loan from the Public Works Administration, may file applications with the commission for approval of the expenditure proposed to be met with the proceeds of the loan.

Barge Line Proposes Extension on Intercoastal Waterway

The Mississippi Valley Barge Line has applied to the Interstate Commerce Commission for a certificate authorizing it to extend its barge operations over the Intercoastal Waterway of Louisiana and Texas between New Orleans and Plaquemine, La., and Beaumont, Port Arthur, Houston, and Galveston, Tex., and for an order requiring the railroads to join in joint rates and through routes via ports on the Ohio and Mississippi rivers. The Southern has filed a vigorous protest asking the commission to make a full investigation before acting on the matter, stating that "it cannot hope to survive if faced with more and more competition from barge lines at rates automatically adjusted 20 per cent under the lowest all-rail rates."

Conference on Road Transport Control in Canada

In accordance with recommendations of the Royal Commission on Transportation, a conference between representatives of the Canadian Provinces and the Dominion Government on highway transportation will be held at Ottawa probably late this month or early in December.

The report of the Royal Commission suggested the advisability of a conference. Having considered the important question of bus and truck competition and its bearing on the operation and earnings of the great Canadian railway systems, the commissioners drew attention to the fact that control of road transportation and taxation for upkeep of highways, as well as kindred subjects, come under the jurisdiction of the provincial governments. Therefore it would not make specific recommendations in regard to bus and truck regulation, but it suggested a joint inquiry by the Dominion and the Provinces into the matter.

Seventeen Eastern Roads Protest Store-Door Tariffs

I. C. C. is asked to disapprove pending plans of Pennsylvania, Erie and Grand Trunk

On behalf of seventeen railroads in Official Classification territory D. T. Lawrence, chairman of the Trunk Line Association, last week filed with the Interstate Commerce Commission a protest asking suspension and ultimate cancellation of the tariffs providing for collection and delivery service on less-than-carload freight filed to become effective on December 1 by the Pennsylvania, the Grand Trunk, and the Erie. "Any major attempt to meet motor truck competition should be postponed for a short time longer," the protestants say, "in order that necessary changes in truck charges and operations due to changed hours and remuneration of labor growing out of the efforts of the National Recovery Administration may be taken into account, and in order that the fate of the railroads' hopes for a thorough-going and workable plan as the result of an investigation of this very subject now being conducted by the Federal Co-ordinator of Transportation may become known." They "recognize the gravity of the results of motor truck competition" and hope that means may be found by which it may be met successfully, but "believe that the methods announced in the above tariffs are not the best and that the present is an inopportune time for placing them in effect."

The utmost haste in reaching a decision was respectfully urged "inasmuch as protestants will reluctantly be obliged to take action to protect their traffic against the competition thus created in the event of an unfavorable decision and will desire sixth section authority to make their tariffs effective December 1." To this end consideration of the petition by the entire commission, and the privilege of oral presentation before the entire commission were requested.

The commission has since set the matter for oral argument before the commission on November 21.

Protestants are "unable to conceive that a thorough plan will not in many details at least conflict with the undertaking announced in the tariffs under consideration" and say that in the matter of collection and delivery service "details are very important." Among the arguments advanced are the following:

"Collection and delivery service under the conditions contemplated in the above tariffs promises to be economically waste-

Maintenance ECONOMIES *Alone*

JUSTIFY *Buying*

NEW POWER

The saving in immediate expenditures necessary for rehabilitation, plus the continued reduction in the cost of maintenance which could be effected by replacing much of the accumulation of old power now on hand, will go far to finance the purchase of new units without considering the operating economies which these units can effect in service.

—Railway Age,
October 28, 1933



ful in that (a) the service will cause the railroads an outlay of money greater than their patrons will save, and (b) the undertaking will broaden the field of competition between railroads and encourage practices which will be at least wasteful if not worse.

"That the proposed service can be furnished only at excessive cost to the carriers is demonstrable upon a brief analysis of the situation. As to the shorter haul traffic which is to be collected and delivered without charge above the normal rates, the issuing and delivering carriers will be obligated either to perform the collection and delivery service themselves or contract for the performance of the service. The details of this matter are not fully known to protestants, but the Pennsylvania Railroad Company has said that it will contract with local truckmen in the various localities—presumably with more than one truckman in individual towns or cities, and presumably with many truckmen in some individual large centers. These contracts are said to be on the basis of flat rates in cents per 100 lbs. without minimum charges, graded according to the conditions existing in each city or town. Other carriers have not been able to secure promises of contracts without minimum charges. Presumably, where minimum charges are not exacted by the truckman, the flat rates in cents per 100 lbs. must be somewhat higher than they otherwise would be.

"Indications point unmistakably to the letting of contracts for performance of these services, and, when it is considered that the actual contract respecting service will remain as between the shippers and consignees with the local truckmen who may in a measure control the routing of traffic or some of it, the eventual result to be expected will be that the carrier making the most liberal contract will transport most of the traffic, an inducement for liberality thus being created. Many protestants feel that if the tariffs in question become effective, they will be obliged to take measures to protect their interests.

"Since much of the traffic will be handled at the larger stations where many of the truckage hauls will be long and the cost consequently relatively high, protestants do not agree that 6 cents represents the average actual cost. In fact they know that in many instances the cost will greatly exceed 6 cents per 100 lbs. for one service. The line between the normal rates and the rates covering collection and delivery service is clear and the use of the two bases is optional with the shipper or consignee. The slightest knowledge of human nature prompts the belief that when the cost of one service is less than 6 cents the patron will elect to use the normal rate and when the cost is greater than 6 cents he will elect to use the inclusive rate. Thus the carriers will be obliged to perform the service on the least desirable traffic in the least desirable hauls and under the least desirable weather conditions. In the end, this must effect their contracts with those who actually perform the service.

"The service of collection will also be especially onerous and expensive. The

carriers must give prompt service if they are to compete with the trucks. The coordination of shipments by various shippers so that the carriers may minimize the number of truck movements will be substantially impossible to obtain on traffic collected, and the rail carriers competing among themselves will be unable to resist the demands of shippers that special efforts be made in the prompt collection of small belated offers for shipment.

"When the collection and delivery service has once been inaugurated upon less-than-carload traffic it will apply not only to that particular class of less-than-carload traffic which it is hoped to recapture from the trucks but to the volume of less-than-carload traffic which is currently being transported by the carriers despite the existence of motor truck competition. There is no assurance whatever that the increased revenue, if any, resulting from business regained from the trucks will offset the decreased revenue attributable to the installation of the collection and delivery service.

"Any argument which might be advanced on behalf of collection and delivery service as a method of meeting motor truck competition on less-than-carload freight can be urged with equal force and persuasiveness as applied to carload freight. The proposed collection and delivery service will undoubtedly be extended to carload freight, particularly such carload freight as moves on class rates, with a consequent impairment of the net earnings on that class of traffic. Moreover, the granting of collection and delivery service at rates less than the combination of the normal charges and the cost of the collection and delivery service is tantamount to a reduction in rates.

"Protestants are firmly of the opinion that the net result of the proposed collection and delivery service will be a substantial reduction in revenues. Due to variation in the differences between the normal rates and the inclusive rates, the rail carriers have no general statistics from which the cost of this service applied to less-than-carload traffic which they handle during any period may readily be compiled. However, it is expected that certain of protestants will have well-founded approximate figures showing this which may be given in oral presentation.

"Not only will the proposed service be performed at excessive cost and with resultant reduction in the revenues of carriers, but it will encourage unnecessary and destructive competition among carriers at the very time when this practice is viewed with disfavor not only as applied to railroads but as applied to all industry as well.

"In the larger cities especially, the inauguration of collection and delivery service without charge above the normal rates will create an economic waste in that it will place all carriers serving the city in competition for traffic which has heretofore sought a certain station or stations on account of proximity, length of haul, etc.

"The rates published in the tariffs under consideration would also in marked degree ignore the relationship as between the various class rates which the Commission ordered in Docket 15879, the *Eastern Class Rate Investigation*, 164 I.C.C. 314."

N. Y. Railroad Club Annual Dinner

The sixty-first annual dinner of the New York Railroad Club will be held at the Hotel Commodore, New York, on Thursday evening, December 14. Preceding the dinner, which is scheduled for 7:00 p.m., a reception will be held, beginning at 6:15 p.m. The present announcement's reference to the program of activities says that these will include an "interesting speaking program and special entertainment features."

Arrangements for the dinner are being made under the direction of the general committee, the general chairman and vice-general chairman of which are, respectively, Thomas P. O'Brian, sales manager, O. M. Edwards Company; and E. A. Jones, purchasing agent, Lehigh Valley. The general committee is being assisted by a number of sub-committees as follows: Advisory committee, J. S. Doyle, assistant to general manager of the Interborough Rapid Transit Company, chairman; reception committee, Frank Hedley, general manager for receivers, Interborough Rapid Transit Company, chairman; dinner committee, Arthur N. Dugan, vice-president, National Bearing Metals Company, chairman; seating committee, H. M. Norris, secretary to general manager, Interborough Rapid Transit Company, chairman; publicity committee, F. T. Dickerson, secretary and treasurer, Central Railroad of New Jersey, chairman.

Applications for reservations are being received by Mr. Norris, the chairman of the seating committee, and should be mailed to him at 165 Broadway, New York.

New Specifications for Structural Steel Approved by A. S. T. M.

The American Society for Testing Materials has approved for publication, as tentative, three new specifications covering steel for bridges, steel for buildings, and mild steel plates. These specifications have the following titles and serial designations:

Tentative Specifications for Steel for Bridges (A 7-33 T)

Tentative Specifications for Steel for Buildings (A 9-33 T)

Tentative Specifications for Mild Steel Plates (A 10-33 T)

The new specifications for bridge and for building steel call for a tensile strength of 60,000 lb. to 72,000 lb. per sq. in.

Particular interest centers on the specifications for bridge steel, because the Committee on Iron and Steel Structures of the American Railway Engineering Association is preparing specifications along parallel lines, which will be submitted to the association at its convention next March. The new specifications for bridge steel are intended to take the place of existing specifications for steel of lower strength, namely 55,000 lb. to 65,000 lb. per sq. in. and a lower yield point, 30,000 lb. per sq. in., compared with 33,000 lb. per sq. in. demanded by the new specifications. However, this greater strength is called for without allowing any decrease in the requirements covering ductility, as determined by the clauses covering elongation in tensile tests, and with only minor changes in the requirements of the cold bending tests.

Continued on next left-hand page



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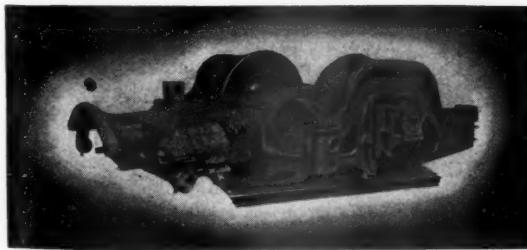
Increased traffic is calling for more power. But it must be efficient power if the maximum net is to be had.

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Apply them now and add the equivalent of several hundred locomotives to the available motive power of the country at a fraction of the cost of obtaining the same power in any other way.

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—and be prepared.**



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

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Conference on Railroad Recovery Organized

The first meeting of a new "Conference on Railroad Recovery," which has been formed by the initiative of the Security Owners' Association, was held in New York on November 14 and was attended by industrial and business leaders from various parts of the country, including many directors of railroads and representatives of insurance companies, savings banks and other financial institutions which are important holders of railroad securities.

The meeting was presided over by Pierre S. du Pont of Wilmington, Del., chairman of the board of E. I. du Pont de Nemours Co. and a director of the Pennsylvania. A committee of nine members was chosen to carry out the purposes of the conference and to co-operate with the Security Owners' Association in consideration of measures regarded as important to the strength and financial stability of the railroad industry.

At the conclusion of the meeting Mr. du Pont said that no specific plan for the railroads had been discussed or formulated. He pointed out that, although the meeting was called to discuss the railroad question, the large interest of the group was in national recovery and not only in railroad measures.

"Railroad prosperity in the main," Mr. du Pont said in part, "depends on national prosperity. We must remember at the same time the tremendous bearing the railroad system has on national economy. Railroads are one of the pillars of the economic structure and their future has a great bearing on the prosperity and welfare of everyone."

"In devising means of dealing with the emergencies of the depression, there is some danger in adopting measures to deal with the questions of immediate importance, of failing to take due account of their bearing on the long term future of the country's transportation. There is an unexampled opportunity for all who have an interest, direct or indirect, in the future of railroads—the Government, the shippers, those employed in the service in any capacity, the managements and the investors—to get together, reconcile their differences of opinion and agree on a program for the future."

"The Co-ordinator of Transportation, appointed under the Emergency Railway Act, is having the hearty co-operation of the railroads in efforts to bring about a better co-ordination of service so as to increase the efficiency and economy of operation. Our group also will co-operate with Mr. Eastman or others dealing with the problem in the hope that a sound basis for a long period of prosperity for the railroads and the country may thereby be established."

"Today's discussion dealt principally with broad questions of policy. All agreed that under private ownership and operation there should be public regulation to safeguard the public interest, but that we should strive for regulative policies expressive of a constructive and not a repressive attitude toward the railroads. Railroads no longer have a monopoly of transportation."

"Public regulation has served as a much better safeguard of the public interest than the competition between the railroads insisted upon under the earlier policies of the country. Now it is seen how costly and wasteful this competition is and how much better it will be to place emphasis on a greater degree of co-operation between the railroads and a more effective co-ordination of their facilities."

Among other speakers was Milton W. Harrison, president of the Security Owners' Association. Mr. Harrison presented the viewpoint of the investor in the present situation and offered to co-operate with the conference in studies of the situation and in formulation of constructive measures.

Fire Destroys Machine Shops of Nevada County

Fire of undetermined origin destroyed the machine shops and shop equipment and damaged two locomotives within the shop buildings of the Nevada County Narrow Gage Railroad at Grass Valley, Cal., on November 8.

Purdue Honors W. L. Batt

W. L. Batt, president of SKF Industries, Inc., was given the honorary degree of Doctor of Engineering by Purdue University on Saturday, November 4. Doctor Batt was graduated from the Department of Engineering at Purdue in 1907, and last May made the dedication address for the new engineering building.

More Fare Reductions

The Atlantic Coast Line and the Central of Georgia have applied to the Interstate Commerce Commission for authority to establish coach fares on the basis of two cents a mile and fares good in sleeping and parlor cars on the basis of three cents a mile, without surcharge, effective on December 1.

I.C.C. Approves Compensation of Trustees and Attorneys

The Interstate Commerce Commission has issued a series of orders stating the maximum amounts which it approves as the compensation of trustees and attorneys for trustees in various railroad reorganization proceedings. Under the law the compensation is to be fixed by the courts within maxima approved by the commission. In the case of Charles M. Thompson, trustee for the Chicago & Eastern Illinois, the commission approved a maximum of \$25,000 a year, commencing September 15. In the case of Wesley H. Maider and Lyon F. Maider, attorneys for the trustee of the Fonda, Johnstown & Gloversville, a maximum of \$9,000 a year was approved, commencing on April 20. In the case of the Akron, Canton & Youngstown and the Northern Ohio, a maximum of \$15,000, commencing on April 8, was approved for H. B. Stewart, trustee, and of \$6,000 for Squire Sanders & Dempsey as attorneys. The commission has added the name of Frank O. Lowden, of Oregon, Ill., to its panel of standing trustees.

Pelley Analyzes Highway, Water, Air Subsidiaries

John J. Pelley, president of the New York, New Haven & Hartford, speaking before the Naugatuck Valley Industrial Traffic Association at Waterbury, Conn., on November 15, declared his belief that this country needs a tribunal which will compare with the Interstate Commerce Commission, but whose scope would embrace all forms of transportation. "It should not be left to highway engineers to determine what highways shall be built," declared Mr. Pelley. "It should not be left to army engineers to determine whether there is any economic justification for a waterway improvement; it should not be left to aviation engineers to determine what airways shall be established; the cost of such procedure has been too great."

Mr. Pelley told his hearers that nearly two billion dollars of the taxpayers' money has been spent by the Federal government to develop water transportation in competition with the railroads, on which the government receives no return, and which cost more than a hundred million dollars a year to maintain, without any consideration of whether there was any economic justification for the expenditures. "No one cared what it cost to develop domestic waterways," Mr. Pelley commented, "so long as the taxpayers paid the bill."

"We hear a great deal about the low freight charges for water transportation," said the speaker, "but the people of this country are seldom told that it is the taxpayers and not the shippers who pay the greater part of the actual cost of water transportation."

The federal government, Mr. Pelley told his hearers, paid more than twelve million dollars in 1932 to provide lighted airways, radio beacons and radio weather service, all of which are furnished without charge to the commercial airlines; paid twenty million dollars in 1932 for transporting mail, which was fourteen million dollars more than the entire revenue derived from air mail without considering the costs of pick-up and delivery.

"It cost the federal government an average of more than \$60.00 for each passenger who traveled by air in the year 1932," Mr. Pelley said. In addition, cities and states also make substantial contributions toward the operation of commercial air lines.

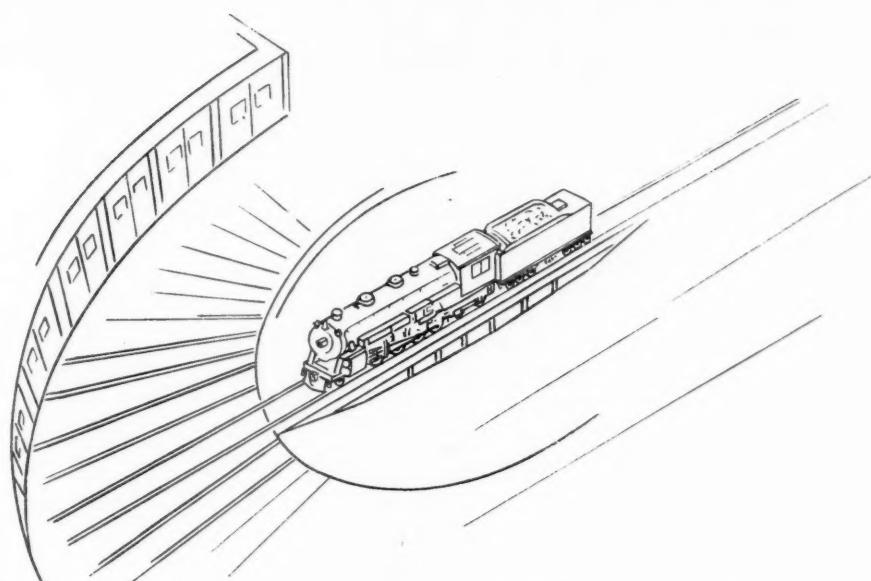
Speaking of highway transportation, Mr. Pelley pointed out that the people have constructed hundreds of thousands of miles of improved highways for the accommodation of private automobiles and the traveling public, but which "are gradually being monopolized by huge motor trucks and motor busses transporting freight and passengers in competition with the railroads."

"Commercial highway transportation in the State of Connecticut," Mr. Pelley charged, "is being subsidized by the taxpayers to the extent of sixteen million dollars a year, an average of \$10 a year for each man, woman and child living in the state."

"Much is being said," he concluded, "about the advisability of the various

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-out goes the district service man



"Send out a man, she's not steaming right," is a frequent request from railroads served by American Arch Company.

Out goes a man and soon the erring one is behaving properly.

Sometimes the Arch needs lengthening, sometimes it needs re-arranging. More often than not, it is something entirely aside from the Locomotive Arch.

But the American Arch Company man is there



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to serve an American Arch Company customer and he brings to bear a rich, practical experience and thorough knowledge of combustion to correct the fault.

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transportation agencies being co-ordinated with each other. It must be obvious to everyone that under the conditions which now exist where the railroads alone are fully regulated and required to be self-sustaining while all other forms of transportation are not only unregulated but heavily subsidized, any real co-ordination is impossible."

Club Meetings

The Toronto (Ontario) Railway Club will hold its annual meeting at the Royal York Hotel, Toronto, on Saturday, December 9, at 2 p.m., and in the evening, at 7 o'clock, will have its third annual dinner.

The regular monthly meeting of the Western Railway Club will be held at the Hotel Sherman, Chicago, on November 20. F. G. Gurley, assistant to the vice-president of the Chicago, Burlington & Quincy, will speak on Light Weight Railroad Equipment.

September Passenger Revenue of L. & N. Exceeded 1932

Passenger traffic revenues of the Louisville & Nashville during September exceeded those of September, 1932, by 11.2 per cent, the first achievement of this kind since June 1926, according to the November issue of the L. & N. Employees' Magazine.

The L. & N. on April 1 reduced its passenger rates, inaugurating a two cent per mile fare for all travel except one-way tickets good in Pullmans, for which three cents a mile is charged, with the surcharge eliminated. Since that time, as pointed out in the *Railway Age* of November 11, passenger business has steadily improved.

Board Reports on Canadian Clerks' Wage Case

A 15 per cent deduction from basic rates of pay for clerks, freight handlers and station employees has been recommended by the board of conciliation appointed by Hon. Wesley Gordon, Minister of Labor at Ottawa, to investigate the dispute between the Canadian Pacific and the unions representing these classes of its employees. The 15 per cent deduction represents an additional 5 per cent upon the deduction of 10 per cent now in operation.

The 15 per cent deduction is qualified by the recommendation that it should not be applicable in cases where its operation would reduce the earnings of certain low-paid employees below stipulated minima.

The conciliation board expresses the view that the application of the 5 per cent deduction "shall not operate further to reduce the earnings of store employees at points where their working hours are governed by shop hours which do not exceed 80 hours per month, and so that the deduction of 15 per cent shall apply only when shops are worked 12 days or more a month."

Plan For Co-operation Between Rail and Water Lines

Further progress toward the formulation of a plan for promoting stability of rates and discouraging destructive competition by co-operation between committees representing the railroads and the water lines was made at a meeting in Washington

on November 14 attended by a railroad traffic committee and representatives of the water carriers. Both sides expressed a desire to go forward with such a plan, which Co-ordinator Eastman has been trying to promote since a first meeting on the subject was held with him on September 6. The railroads were represented by Paul Shoup, vice-chairman of the Southern Pacific; A. R. Smith, vice-president of the Louisville & Nashville, and W. S. Franklin, vice-president of the Pennsylvania. They welcomed the idea of a co-operative plan but were not ready to accept all of a statement of principles drawn up at a previous meeting of the water line representatives at which General Ashburn, chairman of the Inland Waterways Corporation, presided, and will consult further with traffic officers in the three districts. It was understood that something in the nature of a tacit truce on rate reductions without prior consultation was proposed, carrying further an understanding which seems to have prevailed for some time recently between the transcontinental roads and the water carriers, pending the creation of an authorized committee or committees of the water lines.

The proposal at the September 6 meeting was for a plan under which standing committees in specified regions would keep each other fully informed of all proposed reductions in rates for competitive reasons and discuss such proposed changes freely before attempting to make them effective.

Committee To Study Car Pooling

The Federal Co-ordinator of Transportation on November 15 announced the appointment of a committee of railroad mechanical and accounting officers who will cooperate with his organization in its study of freight car pooling. The committee consists of the following, who have not been detached from their present positions, but who will devote such time as may be necessary to the task assigned them:

Eastern Region

Livingston Martin, master car builders accounts, Baltimore & Ohio;
A. E. Calkins, superintendent of rolling stock, New York Central;
R. L. Kleine, assistant chief of motive power, Pennsylvania.

Western Region

K. F. Nystrom, superintendent car department, Chicago, Milwaukee, St. Paul & Pacific;
S. O. Taylor, master car builder, Missouri Pacific;
J. F. Tribble, car repair accountant, Union Pacific System.

Southern Region

C. J. Bodemer, superintendent of machinery, Louisville & Nashville;
B. F. Allen, auditor of disbursements, Seaboard Air Line;
W. B. Henley, traveling mechanical inspector, Illinois Central.

"These officers, working in conjunction with the Co-ordinator's Section of Car Pooling, will undertake to formulate rules for the proper maintenance of freight cars under a pool operation," according to the announcement. "As the Co-ordinator has previously pointed out, it is generally conceded that the lack of an adequate and satisfactory maintenance program has been the greatest drawback in pool plans heretofore advocated. This study is not to be understood as implying any commitment to a pooling plan, but rather as an important step in determining the feasibility

and desirability of such a plan. A comprehensive survey of the freight car equipment (including the repair and retirement program) of all Class I railroads has just been completed and the information developed is available to the Committee in its further study of the subject."

Low Football Rates to Princeton

For football games at Princeton, N. J., on November 11 and 18, the Pennsylvania made rates more than 70 per cent under the regular two-way coach fare; that is to say, one dollar for the round-trip of 103 miles. For the Dartmouth-Princeton game of November 11, about 6,000 of the dollar tickets were sold at New York, Newark and Elizabeth, and a total of 12 extra trains were run westward and 13 eastward. The rates in Pullman cars are about 40 per cent of the customary round-trip fare between these points. Tickets of admission to the games were sold at the New York City ticket offices.

R. F. C. Reduces Interest Rate to Promote Relief Employment

For the purpose of better enabling railroads to employ additional men and make extra purchases of supplies during the winter and succeeding months, the board of directors of the Reconstruction Finance Corporation has reduced the interest rate on loans to railroads, including both new loans and existing loans, from 5 per cent per annum to 4 per cent per annum for a period of one year from November 1.

This action, chairman Jones explained, is based upon requests for a reduction in interest rates from a number of railroad executives who have offered to use the amount of such reduction, together with substantial additional funds, in making extraordinary expenditures during the next six months. "This would mean expenditures for labor, equipment and material over and above their budgets for this period, or in excess of the program presently contemplated by them, the purpose being to help to promote the President's recovery program," he said. "In the light of these representations, and in order to afford the railroads an opportunity to render this additional assistance, the board felt justified in granting this temporary interest reduction."

"The directors of the R.F.C. have taken this action with the expectation that the savings in interest will be availed of and used by the railroads in the spirit herein outlined, together with very substantial additional amounts to be otherwise provided and expended by the railroads in relief employment."

The outstanding R.F.C. loans to railroads at the end of October amounted to \$330,156,513, which had been advanced to 61 railroads. This makes the R.F.C. interest rate correspond temporarily to that offered by the Public Works Administration for longer terms.

Regional Representation on A. R. E. Executive Committee

The Association of Railway Executives, at its meeting in Chicago last week, amended the by-laws to provide for more regional representation on its Advisory Committee, which heretofore has consisted



Some Changes Affect Efficiency

This is especially true of superheater units. Originally they were proportioned to meet certain requirements most efficiently. To tamper with these proportions of areas, surfaces, etc., through an attempt to repair damaged or worn-out parts, seriously reduces their effectiveness in operation.

When, after many years of service, superheater units are in need of repairs, or become unserviceable, send them back to the Elesco plant for a complete overhauling and reconditioning. Through the Elesco unit remanufacturing service, *we re-build them to original specifications*, using in the process only the tubing that is still in serviceable condition.

This service saves you money. It provides the equivalent of a new unit for very little more than the cost of repairs in your own shop. It insures reduced maintenance costs over a period of years.

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of 11 members appointed by the chairman of the executive committee and the chairman and the general counsel ex officio. This number was increased to 15, including 6 from the East, including 1 from New England, 6 from the West, and 3 from the South, to be elected annually, together with the chairman and the general counsel.

The committee as now constituted consists of: W. W. Atterbury, president, Pennsylvania; Daniel Willard, president, Baltimore & Ohio; F. E. Williamson, president, New York Central; J. J. Bernet, presi-

dent, Chesapeake & Ohio; J. J. Pelley, president, New York, New Haven & Hartford; J. M. Davis, president, Delaware, Lackawanna & Western; L. W. Baldwin, president, Missouri Pacific; C. R. Gray, president, Union Pacific; Hale Holden, chairman, Southern Pacific; H. A. Scandrett, president, Chicago, Milwaukee, St. Paul & Pacific; F. W. Sargent, president, Chicago & Northwestern; J. E. Gorman, president, Chicago, Rock Island & Pacific; L. A. Downs, president, Illinois Central; W. R. Cole, president, Louisville & Nash-

ville, Fairfax Harrison, president, Southern; R. H. Aishton, chairman executive committee Association of Railway Executives, and R. V. Fletcher, general counsel of the association. Three members were added to the executive committee: N. B. Pitcairn, co-receiver of the Ann Arbor and Wabash; C. H. Hix, president, Virginian; and George P. Bagby, president, Western Maryland. Other members of the executive committee were re-elected, as were Mr. Aishton, Mr. Fletcher, and Alfred P. Thom, associate general counsel.

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States *

Compiled from 149 Monthly Reports of Revenues and Expenses Representing 150 Class I Steam Railways

FOR THE MONTH OF SEPTEMBER, 1933 AND 1932

Item	United States		Eastern District		Southern District		Western District	
	1933	1932	1933	1932	1933	1932	1933	1932
Average number of miles operated	240,507.60	241,943.36	59,387.08	59,796.05	45,642.46	46,098.14	135,478.06	136,049.17
Revenues:								
Freight	\$235,434,263	\$214,512,152	\$100,260,840	\$85,376,202	\$44,588,525	\$40,912,757	\$90,584,898	\$88,223,193
Passenger	32,013,885	30,480,763	19,104,942	18,516,057	3,517,167	3,102,835	9,391,776	8,861,871
Mail	7,291,127	7,517,045	2,880,794	3,037,990	1,250,295	1,249,968	3,160,038	3,229,087
Express	4,285,419	5,033,610	2,255,132	2,268,895	601,763	660,739	1,428,524	2,103,976
All other transportation	6,440,137	6,395,430	3,436,610	3,568,074	584,129	535,274	2,419,398	2,292,082
Incidental	6,133,497	5,068,252	3,200,393	2,744,591	816,296	679,275	2,116,808	1,644,386
Joint facility—Cr.....	715,659	684,634	249,198	222,258	131,491	113,522	334,970	348,854
Joint facility—Dr.....	166,810	159,216	46,901	37,202	20,282	16,244	99,627	105,770
Railway operating revenues	292,147,177	269,532,670	131,341,008	115,696,865	51,469,384	47,238,126	109,336,785	106,597,679
Expenses:								
Maintenance of way and structures	31,596,651	28,059,110	13,192,409	10,706,965	5,642,414	5,287,124	12,761,828	12,065,021
Maintenance of equipment	54,194,508	47,508,833	25,204,878	20,800,472	10,086,441	8,817,548	18,903,189	17,890,813
Traffic	7,066,345	7,373,571	2,688,651	2,762,247	1,323,657	1,361,608	3,054,037	3,249,716
Transportation	92,704,743	90,378,101	43,432,143	40,953,260	15,061,378	14,628,412	34,211,222	34,796,429
Miscellaneous operations	2,208,157	2,171,703	1,115,161	1,047,752	224,449	210,705	868,547	913,246
General	11,872,078	12,280,395	5,195,475	5,298,106	2,014,384	2,102,580	4,662,219	4,879,709
Transportation for investment—Cr.....	226,332	366,721	60,409	68,787	31,848	20,102	134,075	277,832
Railway operating expenses	199,416,150	187,404,992	90,768,308	81,500,015	34,320,875	32,387,875	74,326,967	73,517,102
Net revenue from railway operations	92,731,027	82,127,678	40,572,700	34,196,850	17,148,509	14,850,251	35,009,818	33,080,577
Railway tax accruals.......	21,746,669	23,248,417	9,254,148	10,519,479	4,046,673	3,960,413	8,445,848	8,768,525
Uncollectible railway revenues	103,932	83,205	32,199	30,838	15,335	19,192	56,398	33,175
Railway operating income	70,880,426	58,796,056	31,286,353	23,646,533	13,086,501	10,870,646	26,507,572	24,278,877
Equipment rents—Dr. balance	6,844,350	6,716,014	3,639,544	3,369,223	† 101,449	† 58,451	3,306,255	3,405,242
Joint facility rent — Dr. balance	3,099,706	3,132,997	1,811,317	1,744,801	285,838	292,300	1,002,551	1,095,896
Net railway operating income	60,936,370	48,947,045	25,835,492	18,532,509	12,902,112	10,636,797	22,198,766	19,777,739
Ratio of expenses to revenues (per cent)....	68.26	69.53	69.11	70.44	66.68	68.56	67.98	68.97

FOR NINE MONTHS ENDED WITH SEPTEMBER, 1933 AND 1932

Average number of miles operated	240,962.49	241,746.19	59,468.91	59,727.78	45,795.64	46,125.02	135,697.94	135,893.39
Revenues:								
Freight	\$1,851,553,169	\$1,815,810,626	\$794,064,874	\$778,987,156	\$377,608,496	\$347,734,975	\$679,879,799	\$689,088,495
Passenger	245,222,664	295,854,105	146,430,099	175,868,931	28,790,283	33,785,831	70,002,282	86,199,343
Mail	67,199,263	71,953,206	26,378,671	28,475,127	11,537,508	12,169,647	29,283,084	31,308,432
Express	32,852,797	41,179,934	14,203,330	18,602,315	6,391,056	6,944,593	12,258,411	15,633,026
All other transportation	54,080,240	59,704,359	30,093,507	34,336,349	4,776,935	4,797,409	19,209,798	20,570,601
Incidental	42,748,325	48,354,163	23,694,611	27,966,999	6,113,842	6,403,416	12,939,872	13,983,748
Joint facility—Cr.....	6,096,483	6,834,343	1,976,563	2,290,906	1,369,743	1,269,719	2,750,177	3,273,718
Joint facility—Dr.....	1,653,571	2,067,382	450,422	580,159	169,172	166,721	1,033,977	1,320,502
Railway operating revenues	2,298,099,370	2,337,623,354	1,036,391,233	1,065,947,624	436,418,691	412,938,869	825,289,446	858,736,861
Expenses:								
Maintenance of way and structures	242,262,885	275,009,117	96,558,505	110,274,906	48,349,144	53,171,183	97,355,236	111,563,028
Maintenance of equipment	440,159,065	468,574,244	197,718,952	211,126,482	83,381,447	85,687,703	159,058,666	171,760,059
Traffic	64,098,700	74,136,750	23,822,587	28,453,143	12,210,760	13,760,848	28,065,353	31,922,759
Transportation	796,367,782	876,870,683	370,446,977	410,452,759	134,276,630	142,745,232	291,644,175	323,672,692
Miscellaneous operations	17,286,524	21,584,288	8,686,851	10,689,141	1,992,600	2,475,418	6,607,073	8,419,729
General	107,584,820	118,833,950	46,351,722	51,788,694	18,369,306	20,384,253	42,863,792	46,661,003
Transportation for investment—Cr.....	2,041,312	3,258,752	729,254	1,089,318	235,053	237,720	1,077,005	1,931,714
Railway operating expenses	1,665,718,464	1,831,750,280	742,856,340	821,695,807	298,344,834	317,986,917	624,517,290	692,067,556
Net revenue from railway operations	632,380,906	505,873,074	293,534,893	244,251,817	138,073,857	94,951,952	200,772,156	166,669,305
Railway tax accruals.......	200,153,616	216,944,448	83,045,402	90,641,494	38,055,738	39,958,610	79,052,476	86,344,344
Uncollectible railway revenues	782,214	704,135	318,672	281,022	97,493	109,824	366,049	313,289
Railway operating income	431,445,076	288,224,491	210,170,819	153,329,301	99,920,626	54,883,518	121,353,631	80,011,672
Equipment rents—Dr. balance	63,203,926	63,756,509	32,681,739	31,946,115	3,751,448	3,247,096	26,770,739	28,563,298
Joint facility rent — Dr. balance	27,267,273	26,635,538	14,798,880	14,407,039	3,004,261	2,726,680	9,464,132	9,501,819
Net railway operating income	340,973,877	197,832,444	162,690,200	106,976,147	93,164,917	48,909,742	85,118,760	41,946,555
Ratio of expenses to revenues (per cent)....	72.48	78.36	71.68	77.09	68.36	77.01	75.67	80.59

* Excludes switching and terminal companies. Statements prior to January, 1933, included switching and terminal companies.

† Deficit or other reverse items.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Continued on next left-hand page

POWER



AMERICAN LOCOMOTIVE COMPANY

"And here is the last word in steam locomotive construction, the Union Pacific 9000 Class freight and passenger locomotive. When bigger steam locomotives than this are built, railroads will have to ream out their tunnels. Designed primarily for fast freight service, the 9000's are used on exceptionally heavy passenger trains, and, like the 7000's, their doom may be sealed by the coming of the newer, lighter, high-speed train just ordered."

The above is quoted from a pamphlet recently given wide distribution. The italics are ours.

The 9000 Class engine referred to handles from 85 to 100 loaded fruit cars at 60 miles per hour — not 1 or 2 cars but 85 to 100. It delivers not 600 horsepower but 5000 continuous horsepower. It is the most economical power unit ever thought of for this particular job.

Ambition is a wonderful thing, and it should and must be encouraged. But it must be tempered at least with a little horse-sense.

No doubt, some day, some time, the 9000 Class engines will be obsolete. But at the present, the records made and being made by these engines, as revenue producers, make us mighty proud to have our name connected to them as their builder.

We are reminded of the remarks made by Mark Twain when his attention was called to a publication which carried his obituary. He stated, "The report is very much exaggerated".

30 CHURCH STREET NEW YORK N.Y.

We are prepared to submit streamlined designs, steam or diesel powered as desired, to meet any or every demand of our railroads.

Equipment and Supplies

PASSENGER CARS

THE NEW YORK RAPID TRANSIT COMPANY (B. M. T.) has ordered from the Edward G. Budd Manufacturing Company one articulated five-section train for service on its elevated and subway lines.

IRON AND STEEL

THE NEW YORK, NEW HAVEN & HARTFORD has ordered 200 tons of steel from the Berlin Construction Company for use in the construction of new steam generators at the Cos Cob, Conn., power house.

LONG ISLAND.—An order for 180 tons of steel for grade crossing elimination work at Forest Park, Long Island, N. Y., has been let to the McClintic-Marshall Corporation by the general contractor, the Wilson & English Construction Company, New York.

Supply Trade

Wayne H. Perry, attached to the office of J. W. Lewis, assistant to President Gerard Swope of the General Electric Company, has been elected an assistant secretary of the company. Mr. Perry's office will be in the new G. E. building, 570 Lexington avenue, New York.

Leland V. Dolan, who has been connected with the G. F. Cotter Supply Company, manufacturers' representative, Houston, Texas, since 1926, has been elected vice-president of that company, succeeding his father, Simon M. Dolan, resigned to engage in similar business at St. Louis, Mo.

Fred E. Bynum of Oklahoma City, Okla., has entered the service of the Inland Steel Company, Chicago. He will be affiliated with the St. Louis, Mo., office of the company to sell its products in the states of Oklahoma and Arkansas. Mr. Bynum was formerly associated with the Gulf States Steel Company.

OBITUARY

Fred K. Shults, eastern representative of the Bettendorf Company, vice-president of the MacLean-Fogg Lock Nut Company, eastern representative of the W. N. Thorneburgh Manufacturing Company and of the Klasing Car Brake Company, with office at New York, died suddenly while on a business visit in Chicago on November 9 at the Harrison hotel. Mr. Shults was born on October 22, 1870, at St. Johnsville, N. Y. He had been prominently identified with the railway supply business for many years having entered the business in 1900. The following year he represented the National Tube Company, in

1907, the American Steel Foundries and since 1911, the Bettendorf Company, retaining the latter association until the time of his death. Mr. Shults had taken an active part in the Railway Supply Manu-



Fred K. Shults

facturers' Association, of which he served as president in 1905-1906. The latter year was the first in which an R. S. M. A. June convention and exhibit was held at Atlantic City, N. J.

James P. Milwood, since 1915 chief chemist of the Okonite Company, Passaic, N. J., died at his home on September 24 after a year's illness. Mr. Milwood was born at Queenstown, Ireland, on July 4, 1869. He was educated at St. Calman's college, later passed the Irish Pharmaceutical Society examinations and then attended Queen's college, receiving his de-



James P. Milwood

gree as pharmaceutical chemist in 1890. Mr. Milwood came to the United States in March, 1891, and four years later in company with a brother founded the Pulvoco Chemical Company. His services were engaged in 1896 by the United States Naval Laboratory and subsequently he served as chief chemist of the Brooklyn Navy Yard, since which time he had been consulted by many railroad, state and municipal officials on the purchase and inspection of rubber goods, especially insulated wire; he was recognized throughout the wire and cable industry as one of the leading authorities on technical matters.

Construction

LEHIGH VALLEY.—The Taughannock boulevard or Glenwood road crossing of this road in Ithaca, Tompkins county, N. Y. has been designated for elimination by order of the New York Public Service Commission. The order provides that the crossing will be eliminated by closing the existing crossing at grade and building a new highway to be constructed easterly and northerly from the present highway. The cost of the work is estimated at \$48,300.

LONG ISLAND.—This road has given a general contract to the Wilson & English Construction Company, New York, for grade crossing elimination work at Forest Park, Long Island, N. Y. The work includes the use of 180 tons of steel which has been ordered from the McClintic-Marshall Corporation.

PENNSYLVANIA.—A contract has been awarded to the Ready Coal & Construction Company, Chicago, for the paving of streets at 22 underpasses which had been previously constructed in connection with the separation of grades on the Englewood Connecting Railway at Chicago.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment*.—The Interstate Commerce Commission has reaffirmed its previous order authorizing this company to abandon a branch line between Quenemo, Kans., and Osage City, 19.5 miles.

COLORADO & SOUTHERN.—*Abandonment*.—The Interstate Commerce Commission has vacated the certificate issued on July 31 authorizing the abandonment of a narrow-gage line from Parlin, Colo., to Quartz, 18.54 miles, and has assigned the proceeding for rehearing at Denver on December 4 before Commissioner Aitchison.

ERIE.—*Abandonment*.—The Interstate Commerce Commission has authorized this company and the Eriton R. R. to abandon the line of the latter company (approximately one mile in length) in Clearfield county, Pa.

MOREHEAD & NORTH FORK.—*Abandonment*.—The Interstate Commerce Commission has authorized this company to abandon that part of its line extending from a point 4 miles southeast of Morehead, Ky., to Redwine, 20.2 miles.

PENNSYLVANIA.—*Franklin Authorized to Serve as Officer*.—The Interstate Commerce Commission has issued an order authorizing Walter S. Franklin to serve as an officer of the Pennsylvania and affiliated lines but has reserved decision on the question as to whether he may serve also as officer and director of the Wabash and Lehigh Valley.

ST. LOUIS-SAN FRANCISCO.—*Reorganization Plan*.—The Trustees have called a



*While Cars Have
Been Idle . . .*

RUST HAS BEEN BUSY

For two years and more the storage tracks have been jammed with idle cars. But inspection shows that rust and corrosion have been busily engaged in their work of destruction. * * * Before cars can be called into service they need repairs. But this time give them the protection against rust and corrosion that is made possible by improved materials. Use Toncan Iron to give longer life and lower future repair costs. * * * Toncan Iron car plates resist corrosion better than ordinary car plates due to their special alloy composition of refined iron, copper and molybdenum. * * * Many miles of freight cars built of Toncan Iron plates are enjoying lower maintenance due to the superior rust resistance of this modern iron. * * * Build your new cars of Toncan Iron and use it on repairs.

CENTRAL ALLOY DIVISION, MASSILLON, OHIO

Toncan Iron Boiler Tubes, Pipe, Plates, Culverts, Rivets, Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for Locomotive Parts • Agathon Engine Bolt Steel • Agathon Iron for pins and bushings • Agathon Staybolt Iron • Climax Steel Staybolts • Upon Bolts and Nuts • Track Material, Maney Guard Rail Assemblies • Enduro Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel.

The Birdsboro Steel Foundry & Machine Company of Birdsboro, Pa. has manufactured and is prepared to supply, under license, Toncan Copper Molybdenum Iron castings for locomotives.

REPUBLIC STEEL
CORPORATION
GENERAL OFFICES R YOUNGSTOWN, OHIO



meeting of the creditors of the company to be held at the office of the Interstate Commerce Commission at Washington on November 24 to discuss questions pertaining to reorganization plans. Both the Reconstruction Finance Corporation and the Interstate Commerce Commission have been studying plans, in addition to the one formulated by the readjustment managers on which some hearings have been held.

Average Prices of Stocks and of Bonds

	Last Nov. 14	Last week	Year
Average price of 20 representative railway stocks..	37.10	38.07	25.93
Average price of 20 representative railway bonds..	63.30	65.03	60.34

Dividends Declared

Delaware & Bound Brook.—\$2.00, quarterly, payable November 20 to holders of record November 15.

Greene.—\$3.00, semi-annually, payable December 19 to holders of record December 15.

Mobile & Birmingham.—4 Per Cent Preferred, \$2.00, semi-annually, payable January 2 to holders of record December 1.

Nashville & Decatur.—7½ Per Cent Guaranteed, 93/4 cents, semi-annually, payable January 1 to holders of record December 20.

Union Pacific.—Common, \$1.50, quarterly, payable January 2 to holders of record December 1.

Railway Officers

EXECUTIVE

Paul A. Trageser has been elected president of the Philadelphia, Bethlehem & New England, the Conemaugh & Black Lick, the South Buffalo Railway, the Steelton & Highspire, the Patapsco & Back Rivers, the Fore River and the Cornwall Railroad, with headquarters at Bethlehem, Pa.

M. D. Green, general attorney for the Missouri-Kansas-Texas at Muskogee, Okla., has been appointed to the newly-created position of executive assistant, with headquarters at Oklahoma City, Okla., reporting to the president on executive matters and to the general counsel, as heretofore, on legal matters.

OPERATING

J. W. Devins, superintendent on the Minneapolis & St. Louis, with headquarters at Ft. Dodge, Iowa, until that position was abolished recently, has been appointed assistant to the general manager, with headquarters at Minneapolis, Minn.

TRAFFIC

L. E. Omer, assistant general passenger agent for the Union Pacific, with headquarters at Omaha, Neb., has been promoted to general passenger agent with headquarters at Los Angeles, Cal., succeeding **George R. Bierman**.

E. W. Goslee, general eastern agent for the Gulf, Mobile & Northern, with headquarters at New York, has been appointed to the newly created position of as-

sistant general freight agent, with headquarters at Mobile, Ala. **L. L. Lapp**, district freight agent at Chicago, has been promoted to general eastern agent at New York to succeed Mr. Goslee.

MECHANICAL

C. E. Chambers, who retired as superintendent of motive power and equipment of the Central of New Jersey on October 1, was born on October 18, 1865, at Augusta, Ill. He was educated in the public schools and entered railroad service on July 5, 1885, with the Chicago, Burlington & Quincy, serving first in the bridge and building department and then as fireman and locomotive engineman. From 1901 to 1902 he was road foreman of engines for the Reading, and from the latter date until December, 1918, he was successively general road foreman of engines, master mechanic, general master mechanic and superintendent of motive power of the Central of New Jersey. Under the United States Railroad Administration, Mr. Chambers served as mechanical assistant to the regional director of the Alleghany region at Philadelphia. He was appointed superintendent of motive power and equipment of the Central of New Jersey in 1920 and served in that capacity until his retirement. A reception and dinner were tendered Mr. Chambers on November 11, at which W. G. Besler, chairman of the board of the Jersey Central, acted as toastmaster.

M. R. Reed, who has been promoted to general superintendent of motive power of the Central region of the Pennsylvania, with headquarters at Pittsburgh, Pa., has been in railway service for 28 years. He was born on June 26, 1883, at Newton, Ill., and was educated at Rose Polytechnic Institute, from which he was graduated in 1905. Previous to his graduation, he served as a laborer in the shops of the Pittsburgh, Cincinnati & St. Louis (now part of the Pennsylvania) at Terre Haute, Ind., returning to these shops as a signal



M. R. Reed

repairman following his graduation. After a few months, Mr. Reed resigned this position to become a special apprentice on the Union Pacific at Omaha, Neb., subsequently returning to the P. C. & St. L. as a draftsman at Terre Haute. Later

he was advanced through the positions of assistant foreman and chief draftsman, being appointed general car inspector of the Northwest System of the Pennsylvania in 1917. In the following year he was made superintendent of car repairs and in 1919 master mechanic of the Eastern division, being transferred to the Logansport division in 1920. In 1925 Mr. Reed was advanced to assistant general superintendent of motive power of the Northwestern region which position he held until July, 1926, when he was appointed acting master mechanic of the Ft. Wayne division at Ft. Wayne, Ind., subsequently being appointed master mechanic of this division. In 1928 he was promoted to superintendent of motive power at Buffalo, N. Y., and in 1930 he was transferred to Harrisburg, Pa., where he was located at the time of his recent appointment.

OBITUARY

W. C. Moore, freight claim agent of the Seaboard Air Line, with headquarters at Portsmouth, Va., died on November 12.

H. D. Brown, superintendent of the Aurora and LaCrosse divisions of the Chicago, Burlington & Quincy, with headquarters at Aurora, Ill., died on November 12 at his home at Aurora. Mr. Brown was stricken more than a month ago while on an inspection trip over his territory.

James H. Clark, superintendent of floating equipment of the Baltimore & Ohio, with headquarters at New York, died suddenly of a heart ailment at his home in Clifton, S. I., on November 10. Mr. Clark was 69 years of age and had been in the service of the B. & O. for approximately 45 years.

George T. Bell, who retired as executive assistant to the traffic vice-president of the Canadian National in 1926, died in Montreal on November 12 of a heart attack. Mr. Bell was born in Montreal, Quebec, on September 7, 1861. He entered railway service in 1880 as a car mileage clerk for the Great Western (later the Grand Trunk) at London, Ont. He later served as stenographer and rate clerk in the passenger department and in 1882 he became chief clerk to the assistant general passenger agent of the Grand Trunk. He was later transferred in the same capacity to the office of the general passenger agent at Montreal. In 1892, Mr. Bell was appointed assistant general passenger agent and in 1900 he became general passenger and ticket agent. From 1908 to 1909 he also served the Grand Trunk Pacific in the same capacity. In 1909 he was appointed assistant passenger traffic manager of both roads. He served as passenger traffic manager of the Grand Trunk from May, 1913, to March, 1923, at which time he became executive assistant to the traffic vice-president of the Canadian National, the position he held at the time of his retirement in 1926. Mr. Bell was one of the best known railway men of this continent and contributed largely to the development of railway passenger service during his active career.



Duplex Packing



APPLICATION of HUNT-SPILLER *Duplex* Sectional Packing will give steam tight operation with Maximum Mileage between renewals and with more efficient locomotive performance.

The well balanced design of this packing assures maximum wear. The supporting spring is scientifically formed and heat treated to withstand high super-heat temperatures.

Duplex Sectional Packing offers an exceedingly practical and economical installation for either new or worn cylinders.

HUNT-SPILLER MFG. CORPORATION
J.G. Platt, Pres. & Gen. Mgr. V.W. Ellet, Vice-President

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H S G I
Reg. U. S. Trade Mark

- Cylinder Bushings
- Cylinder Packing Rings
- Pistons or Piston Bull Rings
- Valve Bushings
- Valve Packing Rings
- Valve Bull Rings
- Crosshead Shoes
- Hub Liners
- Shoes and Wedges
- Floating Rod Bushings
- Parts Finished For Application
- Dunbar Sectional Type Packing
- Duplex Sectional Type Packing for Cylinders and Valves (Duplex Springs for Above Sectional Packing)
- Cylinder Snap Rings
- Valve Rings All Shapes

Air Furnace

HUNT-SPILLER GUN IRON

Operating Statistics of Large Steam Railways—Selected Items for the Month of September, 1933,

	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line				
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross Excluding locomotives and tenders	Net Revenue and non-revenue	Servicable	Unserviceable	Per cent unservicable		
Region, road and year													
New England Region:													
Boston & Albany.....	1933	402	123,132	127,942	8,685	3,240	69.5	162,119	54,321	59	46	43.6	12
	1932	402	107,854	112,917	7,418	3,003	69.3	152,581	51,773	60	56	48.2	19
Boston & Maine.....	1933	2,052	262,663	294,931	28,278	9,044	68.1	483,058	180,754	120	166	57.9	10
	1932	2,057	243,493	274,622	25,054	8,035	68.9	417,106	152,238	137	152	52.5	29
N. Y., New H. & Hartf....	1933	2,044	329,786	401,722	21,480	10,650	66.1	570,528	212,189	209	148	41.5	28
	1932	2,038	311,253	366,366	20,397	9,598	66.3	506,995	185,404	210	140	40.0	16
Great Lakes Region:													
Delaware & Hudson.....	1933	848	212,967	289,858	34,492	7,280	61.2	460,307	208,625	253	25	9.1	141
	1932	848	196,262	259,029	28,340	6,291	60.3	394,365	175,607	260	22	7.7	165
Del., Lack. & Western....	1933	998	335,480	373,628	49,041	11,021	66.3	631,833	250,923	195	70	26.4	56
	1932	998	316,403	349,015	46,566	10,185	65.5	583,533	226,273	211	58	21.6	71
Erie (incl. Chi. & Erie)....	1933	2,316	685,819	714,933	65,289	27,572	60.8	1,725,835	624,549	301	196	39.4	64
	1932	2,316	640,688	675,721	41,235	26,070	59.9	1,648,056	590,006	346	154	30.7	124
Grand Trunk Western.....	1933	1,008	185,646	186,952	2,238	4,727	59.6	286,744	96,420	73	74	50.3	6
	1932	1,023	167,414	168,246	923	3,884	58.7	237,899	78,969	94	62	39.7	31
Lehigh Valley.....	1933	1,341	385,296	405,884	41,261	11,773	64.5	715,144	293,026	165	152	48.0	7
	1932	1,343	317,015	331,059	28,050	9,977	64.6	597,531	241,247	187	125	40.1	40
Michigan Central.....	1933	1,957	365,441	365,535	14,213	11,618	59.0	694,316	223,630	132	56	30.1	25
	1932	2,115	307,409	307,714	8,184	9,115	61.1	529,163	178,804	126	78	38.3	41
New York Central.....	1933	6,426	1,441,503	1,548,419	104,899	53,344	60.1	3,374,501	1,386,590	560	600	51.7	18
	1932	6,432	1,315,642	1,411,044	100,983	47,574	60.2	2,966,970	1,187,064	583	707	54.8	81
New York, Chi. & St. L.	1933	1,660	484,409	511,480	5,458	13,902	60.4	833,851	290,616	132	63	32.2	15
	1932	1,661	403,539	415,282	4,972	12,322	61.7	713,054	246,359	142	100	41.5	47
Pere Marquette.....	1933	2,254	310,624	319,336	3,013	6,859	58.5	451,493	172,826	112	59	34.3	11
	1932	2,286	267,386	273,526	2,449	5,952	58.3	387,140	149,048	125	45	26.5	30
Pitts. & Lake Erie.....	1933	231	62,085	63,487	1,112	2,255	59.3	183,166	100,979	33	38	53.9	6
	1932	235	52,055	53,340	1,526	2,140	56.1	191,496	106,810	28	57	66.9	7
Wabash.....	1933	2,453	494,351	501,306	10,634	14,878	61.1	882,822	281,707	177	167	48.6	22
	1932	2,497	452,948	462,303	9,061	13,879	64.9	773,147	258,804	191	178	48.2	35
Central Eastern Region:													
Baltimore & Ohio.....	1933	6,282	1,404,087	1,712,299	204,999	42,129	59.2	2,975,738	1,354,817	727	589	44.8	85
	1932	6,277	1,164,020	1,357,440	136,748	33,590	60.3	2,208,251	938,303	787	556	41.4	198
Big Four Lines.....	1933	2,655	589,386	611,076	24,682	17,250	61.0	1,076,243	476,249	239	162	40.4	25
	1932	2,664	522,971	543,314	14,436	15,386	60.9	984,113	434,458	240	173	41.9	26
Central of New Jersey.....	1933	692	133,018	149,481	27,516	5,454	56.6	320,043	147,142	106	67	38.5	45
	1932	692	134,622	148,948	24,314	4,305	56.1	298,601	136,639	117	61	34.4	59
Chicago & Eastern Ill.	1933	939	172,809	174,526	2,817	3,879	63.3	239,959	101,909	61	109	64.3	12
	1932	939	154,417	154,483	3,017	3,325	63.1	209,955	89,145	74	81	52.4	33
Elgin, Joliet & Eastern....	1933	446	80,229	80,756	1,163	1,769	57.9	145,130	72,536	69	20	22.1	17
	1932	447	59,146	59,348	505	1,377	57.4	108,004	51,561	81	9	10.0	40
Long Island	1933	396	31,507	32,390	12,772	356	54.6	25,465	9,579	29	23	43.7	
	1932	396	29,782	31,059	11,244	324	53.6	23,512	8,932	40	8	16.7	11
Pennsylvania System.....	1933	10,082	2,640,461	2,932,288	321,090	91,321	62.4	6,125,771	2,757,082	1,470	953	39.3	288
	1932	10,522	2,302,442	2,580,211	264,779	80,509	62.1	5,271,812	2,288,337	2,014	510	20.2	1,007
Reading	1933	1,454	381,234	415,004	43,905	10,817	59.3	796,384	370,779	262	109	29.3	92
	1932	1,454	350,185	376,802	36,596	9,475	58.4	672,162	307,554	261	123	32.1	104
Pocahontas Region:													
Chesapeake & Ohio.....	1933	3,146	840,389	887,604	36,657	36,955	55.3	3,165,429	1,716,886	480	202	29.6	160
	1932	3,136	769,523	803,264	26,162	33,180	54.8	2,856,677	1,548,435	545	136	20.0	260
Norfolk & Western.....	1933	2,162	618,713	645,163	28,555	25,057	58.1	2,164,277	1,145,958	412	60	12.8	169
	1932	2,258	530,939	553,953	25,052	20,377	58.6	1,639,963	849,467	421	65	13.3	195
Southern Region:													
Atlantic Coast Line.....	1933	5,144	424,032	425,368	5,739	8,249	63.7	444,107	160,646	356	124	25.9	131
	1932	5,144	392,584	393,038	5,730	7,364	64.4	376,711	126,901	396	90	18.6	163
Central of Georgia.....	1933	1,904	194,924	195,765	2,585	4,253	70.0	220,462	81,015	107	36	25.3	
	1932	1,900	185,394	186,560	3,156	4,086	70.5	209,571	77,110	87	56	38.9	3
Ill. Cent. (incl. Y. & M. V.)....	1933	6,644	1,248,255	1,263,818	21,525	28,709	59.3	1,894,020	753,345	580	345	37.4	13
	1932	6,658	1,246,383	1,262,028	21,332	29,655	56.9	2,039,026	811,264	670	264	28.3	39
Louisville & Nashville....	1933	5,112	944,624	1,023,846	29,459	21,816	58.5	1,559,926	756,105	338	310	47.8	13
	1932	5,258	879,512	940,606	24,555	19,083	57.3	1,348,036	628,093	413	296	41.8	138
Seaboard Air Line.....	1933	4,303	379,222	387,424	2,192	8,757	66.0	493,560	188,990	219	69	24.0	39
	1932	4,377	368,423	371,784	3,540	7,937	63.9	442,964	158,997	254	39	13.3	74
Southern	1933	6,602	1,027,309	1,041,897	17,147	23,696	67.3	1,274,626	476,810	693	222	24.3	194
	1932	6,656	983,480	994,260	16,639	23,097	67.0	1,225,675	444,943	744	222	23.0	271
Northwestern Region:													
Chi. & North Western....	1933	8,443	970,178	1,035,332	24,807	24,474	60.4	1,529,414	525,578	576	228	28.3	126
	1932	8,443	899,951	952,064	20,822	22,308	61.1	1,346,804	434,569	627	193	23.5	249
Chicago Great Western....	1933	1,463	216,622	217,478	16,542	6,696	56.6	429,862	143,486	66	32	33.1	7
	1932	1,463	200,044	201,135	18,994	6,399	59.6	391,651	136,894	69	43	38.2	13
Chi., Milw., St. P. & Pac.	1933	11,211	1,163,588	1,237,876	52,160	31,036	60.3	1,951,938	763,915	664	235	26.1	262
	1932	11,246	1,153,421	1,226,642	59,330	30,296	61.3	1,928,986	787,601	763	137	15.2	370
Chi., St. P., Minneap. & Om.	1933	1,681	206,655	215,158	9,509	4,386	66.3	262,008	109,373	128	27	17.4	60
	1932	1,714	215,340	224,058	9,804	4,311	66.2	256,542	105,144	142</td			

Compared with September, 1932, for Roads with Annual Operating Revenues Above \$25,000,000

Region, road and year	Average number of freight cars on line			Gross ton- miles per hour, ex- cluding un- serv- ice- able	Gross train- ton-miles per hour, ex- cluding loco- mo- tives and locomotives tenders and tenders	Net ton- miles per train- mile	Net ton- miles per car- mile	Net ton- miles per car- day	Car- miles per car- day	Net ton- miles per road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Loco- motives per ton-miles per day
	Home	Foreign	Total	Per cent un- serv- ice- able	train- ton-miles per hour, ex- cluding loco- mo- tives and locomotives tenders and tenders	Net ton- miles per train- mile	Net ton- miles per car- mile	Net ton- miles per car- day	Car- miles per car- day	Net ton- miles per road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Loco- motives per ton-miles per day
New England Region:												
Boston & Albany.....	3,926	3,369	7,295	32.2	21,164	1,317	441	16.8	248	21.3	4,507	149
1932	4,468	2,536	7,004	35.2	21,630	1,415	480	17.2	246	20.6	4,296	153
Boston & Maine.....	10,214	7,858	18,072	21.9	24,913	1,839	688	20.0	333	24.5	2,936	102
1932	11,275	6,709	17,984	16.9	22,778	1,727	631	18.9	285	21.8	2,489	100
N. Y., New H. & Hartf.....	15,189	10,078	25,267	11.1	25,573	1,730	643	19.9	280	21.2	3,460	107
1932	16,605	9,212	25,817	8.9	23,612	1,629	596	19.3	239	18.7	3,032	108
Great Lakes Region:												
Delaware & Hudson.....	10,582	3,061	13,643	4.1	27,253	2,161	980	28.7	510	29.0	8,200	103
1932	11,872	2,502	14,374	4.0	25,769	2,009	895	27.9	407	24.2	6,902	113
Del., Lack. & Western.....	17,120	4,597	21,717	13.0	27,116	1,883	748	22.8	385	25.5	8,380	131
1932	19,031	3,529	22,560	10.2	26,360	1,844	715	22.2	334	23.0	7,556	122
Erie (incl. Chi. & Erie).....	32,464	13,690	46,154	5.4	39,431	2,516	911	22.7	451	32.8	8,989	96
1932	36,070	11,736	47,806	4.8	39,863	2,572	921	22.6	411	30.3	8,492	96
Grand Trunk Western.....	5,600	7,950	13,550	22.1	28,228	1,545	519	20.4	237	19.5	3,187	93
1932	5,405	7,074	12,479	13.3	24,062	1,421	472	20.3	211	17.7	2,573	107
Lehigh Valley.....	18,523	6,552	25,075	19.9	30,784	1,856	761	24.9	390	24.3	7,285	136
1932	20,601	4,330	24,931	17.8	30,791	1,885	761	24.2	323	20.6	5,987	121
Michigan Central.....	23,845	19,376	43,221	13.0	34,510	1,900	612	19.2	172	15.2	3,809	107
1932	23,832	15,167	38,999	9.1	29,452	1,721	582	19.6	153	12.7	2,818	108
New York Central.....	67,753	62,476	130,229	22.7	35,550	2,341	962	26.0	355	22.7	7,193	96
1932	86,820	55,867	142,687	19.1	33,161	2,255	902	25.0	277	18.5	6,152	97
New York, Chi. & St. L.....	9,509	6,760	16,269	6.0	30,541	1,721	600	20.9	595	47.2	5,835	97
1932	15,817	6,210	22,027	13.0	30,070	1,767	610	20.0	373	30.2	4,945	95
Pere Marquette.....	12,684	4,708	17,392	2.9	24,511	1,454	556	25.2	331	22.5	2,556	88
1932	13,949	3,861	17,810	4.1	23,263	1,448	557	25.0	279	19.1	2,173	87
Pitts. & Lake Erie.....	15,011	9,915	24,926	26.8	43,736	2,950	1,626	44.8	135	5.1	14,559	107
1932	18,765	6,372	25,137	30.1	53,806	3,679	2,052	49.9	142	5.1	15,139	86
Wabash.....	14,926	8,164	23,090	6.2	35,179	1,786	570	18.9	407	35.2	3,828	100
1932	19,577	7,003	26,580	8.7	32,769	1,707	571	18.6	325	26.8	3,455	100
Central Eastern Region:												
Baltimore & Ohio.....	87,286	25,945	113,231	19.7	26,489	2,119	965	32.2	399	21.0	7,188	142
1932	98,491	15,930	114,421	13.1	24,527	1,897	806	27.9	273	16.2	4,982	137
Big Four Lines.....	19,975	21,604	41,579	16.5	31,468	1,826	808	27.6	382	22.7	5,980	109
Central of New Jersey.....	21,530	18,607	40,137	16.8	31,441	1,882	831	28.2	361	21.0	5,437	107
1932	16,360	7,033	23,393	30.9	28,111	2,406	1,106	32.4	210	11.4	7,088	122
Chicago & Eastern Ill.....	17,395	6,497	23,892	21.6	27,442	2,218	1,015	31.7	191	10.7	6,582	131
1932	5,996	2,482	8,478	23.4	23,967	1,389	590	26.3	401	24.1	3,618	118
Elgin, Joliet & Eastern.....	6,173	2,121	8,294	15.9	22,157	1,360	577	26.8	358	21.2	3,165	125
1932	9,445	3,809	13,254	19.9	15,722	1,809	904	41.0	182	7.7	5,421	109
Long Island.....	765	3,677	14,442	12.5	16,079	1,826	872	37.4	128	6.0	3,844	112
1932	795	3,436	4,231	1.3	6,366	808	304	26.9	72	4.9	806	255
Pennsylvania System.....	241,097	52,130	293,227	12.0	32,317	2,320	1,044	27.6	70	4.8	752	314
1932	251,224	46,056	297,280	8.0	31,202	2,290	994	28.4	257	14.5	7,245	119
Reading.....	34,624	8,831	43,455	22.5	24,984	2,089	973	34.3	284	14.0	8,503	143
1932	38,652	6,758	45,410	18.4	22,520	1,919	878	32.5	226	11.9	7,053	139
Pocahontas Region:												
Chesapeake & Ohio.....	44,073	10,722	54,795	2.5	51,555	3,767	2,043	46.5	1,044	40.7	18,190	70
1932	45,217	8,372	53,589	2.8	49,744	3,712	2,012	46.7	963	37.7	16,460	69
Norfolk & Western.....	34,687	3,895	38,582	3.8	50,940	3,498	1,852	45.7	990	37.3	17,666	94
1932	38,921	4,042	42,963	2.4	44,586	3,089	1,600	41.7	659	27.0	12,539	104
Southern Region:												
Atlantic Coast Line.....	27,206	4,328	31,534	24.5	17,421	1,047	379	19.5	170	13.7	1,041	121
1932	28,243	3,768	32,011	12.5	16,059	960	323	17.2	132	11.9	822	123
Central of Georgia.....	7,268	2,035	9,303	25.9	20,024	1,131	416	19.0	290	21.8	1,419	125
1932	7,492	1,712	9,204	24.1	19,358	1,130	416	18.9	279	21.0	1,353	121
Ill. Cent. (incl. Y. & M. V.).....	53,716	13,994	67,710	30.5	23,925	1,517	604	26.2	371	23.8	3,780	127
1932	53,487	13,110	66,597	20.2	24,911	1,636	651	27.4	406	26.1	4,062	125
Louisville & Nashville.....	48,810	7,091	55,901	28.4	24,047	1,651	800	34.7	451	22.2	4,930	128
1932	51,564	5,773	57,337	22.4	22,620	1,533	714	32.9	365	19.3	3,982	131
Seaboard Air Line.....	13,070	3,394	16,464	10.0	20,573	1,302	498	21.6	383	26.9	1,464	118
1932	15,395	3,219	18,614	12.1	18,919	1,202	432	20.0	285	22.3	1,211	129
Southern.....	31,638	17,998	49,636	21.2	20,244	1,241	464	20.1	320	23.7	2,408	143
1932	41,445	22,974	64,419	14.7	19,839	1,246	452	19.3	230	17.8	2,228	142
Northwestern Region:												
Chi. & North Western.....	44,756	18,062	62,818	10.6	23,903	1,576	542	21.5	279	21.5	2,075	117
1932	45,582	18,525	64,107	8.9	22,268	1,497	483	19.5	226	19.0	1,716	115
Chicago Great Western.....	3,305	6,414	6,1	34,809	1,984	662	21.4	746	61.5	3,268	121	
1932	5,057	3,779	8,836	11.8	33,129	1,958	684	21.4	516	40.5	3,118	122
Chi. Milw., St. P. & Pac.....	59,577	14,536	74,113	4.3	26,017	1,678	657	24.6	344	23.1	2,271	112
1932	62,901	12,791	75,692	3.7	25,185	1,672	683	26.0	347	21.8	2,334	114
Chi. St. P., Minnep. & Om.	1,817	6,278	8,095	10.2	18,484	1,268	529	24.9	450	27.3	2,169	108
1932	2,218	7,395	9,613	9.1	16,941	1,191	488	24.4	365	22.6	2,045	111
Great Northern.....	42,872	14,930	57,802	4.8	33,583	2,267	1,000	30.0	410	23.1	2,814	105
1932	44,174	13,066	57,240	4.3	29,063	1,984	845	27.0	324	18.9	2,200	111
Minneapolis, St. P. & S.												

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REGULATION OF RAILROAD FINANCE

By

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Instructors in the Wharton School of Finance and
Commerce; University of Pennsylvania

Regulation of the financial affairs of railroads by the Federal government through the Interstate Commerce Commission, under the Transportation Act of 1920, is clearly explained in this book. The various tests applied by the Commission in determining the elements of public interest to which the statute usually refers are traced, together with the nature and reasons for the Commission's action in regulating the financial affairs of the railroads.

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